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LONDON GUARANTEE BUILDING
Michigan Avenue at Wacker Drive
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finish

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Editor and publisher, DANA CHASE. Associate editors, PROF. A. I. ANDREWS and PROF. R. M. KING.

finish

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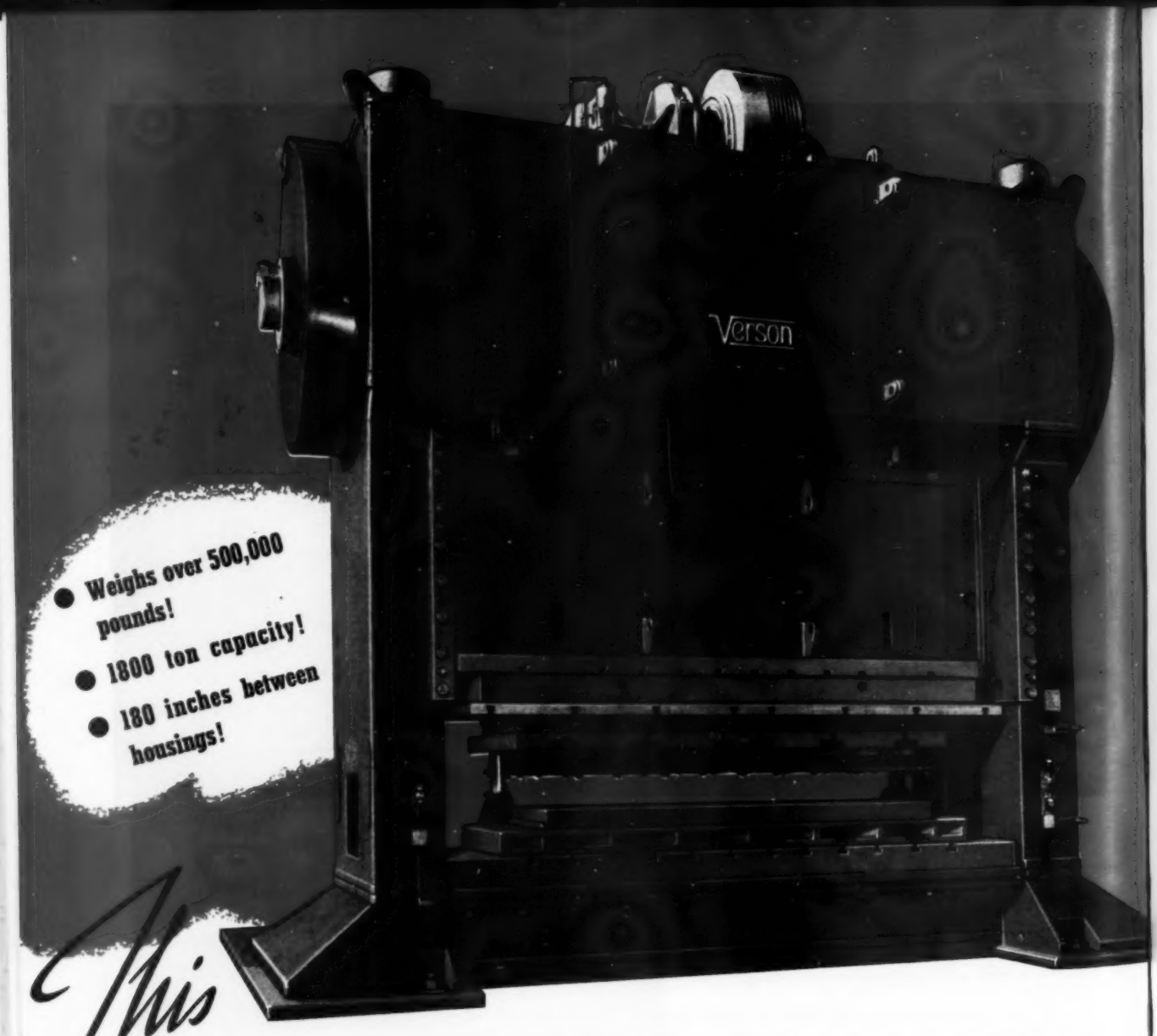

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THE Finish Line

ABOUT "POTS AND PANS" — All during the war, when the majority of porcelain enameling plants were closed down entirely, converted to war work, or crippling along at a greatly reduced production rate, the kitchenware section of the porcelain enameling industry was the "bright spot." Due to wartime requirements for cooking ware and hospital products of the type that could be manufactured by the holloware producers, production figures were tremendous when compared with other divisions of the industry.

Research and development

This group of manufacturers has been active on a cooperative basis through the Enameled Utensil Manufacturers Council, and as individual producers, to improve enamels and application methods so that the resulting ware will give better service and increased satisfaction to the ultimate user.

Cooperative promotion, too

In addition to their work on product improvement, the Council has sponsored promotion work of an educational nature and a cooperative advertising program to acquaint the consumer with improvements and advantages to be expected of the new "porcelain on steel" kitchen ware. The group is to be congratulated on this program for industry advancement.

It is a pleasure to describe constructive activity within our industry; but, if *finish* is to be helpful, it would seem that our editorials must be candid as well as complimentary.

Quality from the consumer "viewpoint"

Much effort toward the improvement of thermal shock resistance, impact resistance, scratch resistance, and other physical properties of kitchenware, can be readily lost on the housewife if the *general appearance* of the finished product belies these improvements. You can't see the physical properties mentioned, but you can see the ragged beads and drain lines, or feel the lack of rigidity in the handle of a sauce pan. Much ware on the open market in recent months could be almost classed as "seconds" because of defects of this nature.

And how about design?

Buyers at the markets this year were open in their criticism of what they termed "the failure of the enamel kitchenware manufacturers to keep up with design trends." If any reader cares to conduct his own survey among housewives, he may logically get this same reaction.

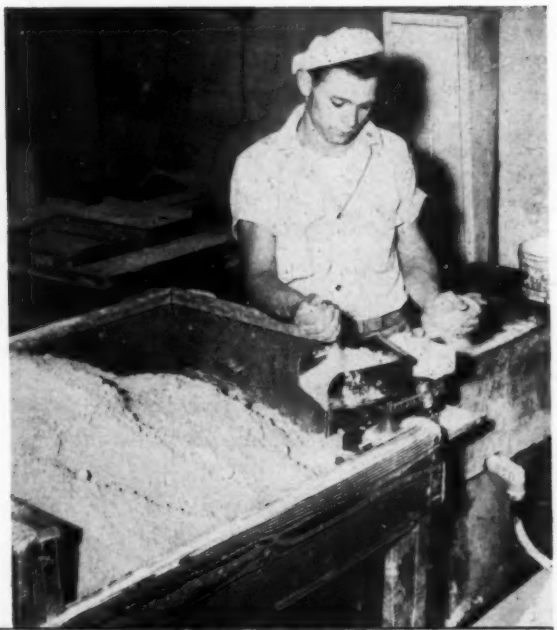
There have been distinctive design changes in the lines of competitive materials which give utensils a new and modern appearance, while, in the minds of many women, much of the porcelain enameled ware looks the same as it did many years ago.

It's possible that the enamelware manufacturers have new designs ready to "pull out of the hat." If not, we would suggest that they get busy immediately, as this problem is likely to become critical before many months roll by.

Dana Chase

EDITOR AND PUBLISHER

McDANEL
Porcelain Lininq Bricks
mean Lower Maintenance Costs!



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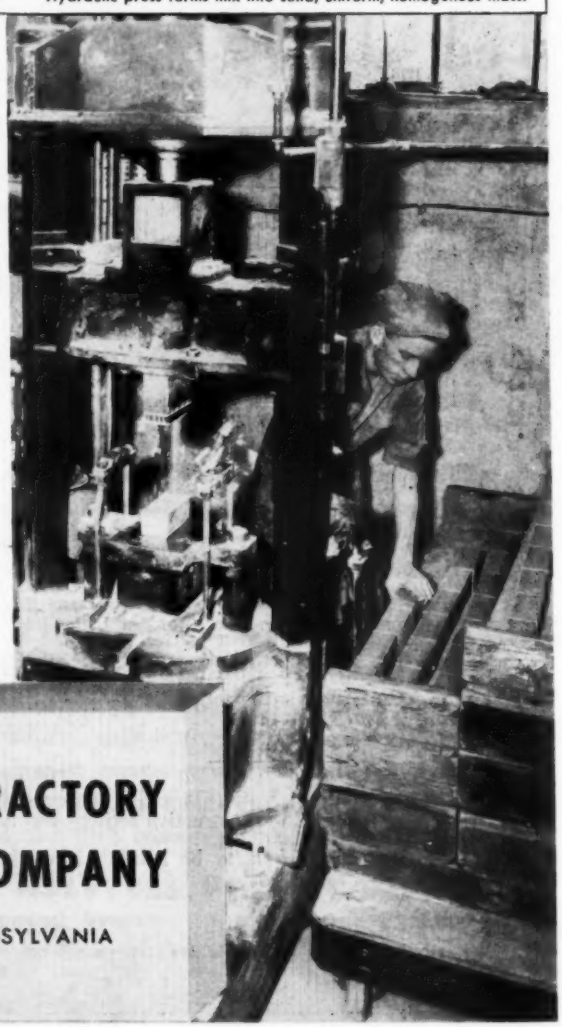


McDANEL REFRACTORY PORCELAIN COMPANY

BEAVER FALLS, PENNSYLVANIA

From airplanes to kitchen ranges
and frozen food cabinets

porcelain enameling operations at the new Consolidated Vultee plant in Nashville

By Gerald Eldridge Stedman

Exclusive feature finish

This assignment for *finish* brought me to Nashville, capital city of Tennessee, and to Consolidated Vultee Aircraft Corporation — my 899th countrywide plant visit since 1942.

The Nashville Division is one of the five manufacturing divisions of Convair. It presently produces gas and electric kitchen ranges and "frostmaster" frozen food storage cabinets for the Crosley Division of Aviation Corporation, as well as 44-passenger city buses for ACF-Brill Motors Company. The plant maintains the first completely conveyorized final bus assembly line (34 stations and much of the line aloft) I have seen. This plant, built shortly before the war, is completely modern, with excellent lighting and ventilation. The main building is 1000′ long x 700′ wide. The total plant and office area is 950,000 sq. ft., 135,000 sq. ft. being at basement level. The plant produced A-35 and V-72 bombers initially; ending with the famed P-38 fighter.

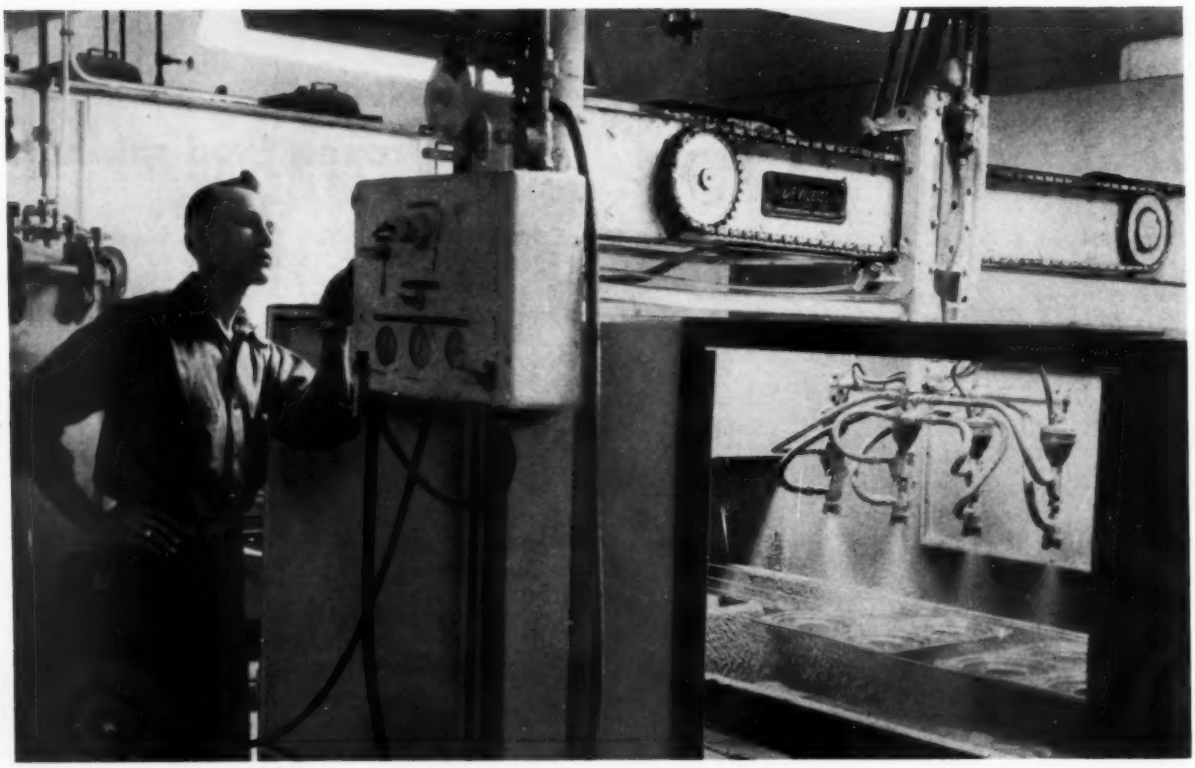
Complete conversion required

V-J day brought need for complete conversion . . . and I mean complete. The entire floor was swept clean of all equipment. New products, processes, methods, equipment, and means were installed. This may have been one of the fastest conversions of the country, considering the drastic changes and dimensions of changeover.

The Nashville Gas & Heating Company, itself recently converted from manufactured to natural gas, tapped its incoming lines from the Corpus Christi fields over the Tennessee Gas and Transmission Company system and that of Tennessee Natural Gas Lines, Inc., ran a 5 mile gas main into the plant at $100,000 cost. This was turned on December 8th, 1946, facilitating first firing of the new porcelain enameling plant.

Convair maintains two N. C. & St. L. railroad sidings along the 1000′ west side of its plant. A 10 T. crane, with 100′ span, 200′ travel, services two other tracks located at the south end of the plant. Sheet steel from incoming gondolas is unloaded by it

Chief Plant Engineer W. V. Bogart and W. B. Evans, in charge of enameling processes, watch as parts are dipped in ground coat and hung on continuous drying conveyor.



Automatic spray machine for spraying ground coat. Low firing ground coats are used.

and onto 30″ x 8′ sheet-size dollies for movement into storage and to shears. This plant, like all others, and particularly throughout the south, is almost desperately short of sheet steel. Hot and cold rolled steel in about any size and specification is being accepted. Naturally, enameling iron is preferred when obtainable.

Fabrication on same floor level with steel storage

Shear, press, enamel mill room, tool repair, and maintenance areas are at basement level, where the sheet steel is received. Batteries of roller levellers, slitters, press brakes and shears, together with 60 presses, including capacities up to 750 T. hydraulic, prepare the work into some 150 sheared sizes, from which a variety of over 200 parts move by tote boxes on ramp conveyor, having 100′ travel up an escalator to main floor. Tote boxes are 36″ x 40″ x 32″ of approximately one ton capacity. Ramp rollers contact the tote box bottom, conveying it upward. Work comes to main floor transfer areas for distribution, much of it to be spot-welded. Pieces arriving here are all ultimately porcelain enameled or black japanned.

Looking south, the plant devoted to the business I shall describe, occupies an area 200′ wide by 400′, bounded by an 8′ main aisleway on each side, along which run the main furnace conveyor lines. The black enameling operation, alone, extends beyond this width and is located at the northern end of the layout.

The overall japanning line is 300′ long, comprising an automatic washer set up and dip approach accupying approximately 125′. The conveyor dip is automatic and submerged below floor level. Dip tanks are over an underlying catch well, into which the entire dip can be instantaneously dumped by valve operation. There is plenty of CO_2 fire protection equipment there, too. From dip, work moves aloft to the 170′, tunnel-type black japan oven. This is four-zone, continuous, gas fired. Its conveyor chain moves 4½′/min. Holders of special design are in variety to accommodate all types of work. Japanning temperature in the hot zone is 450°F.

From japanning and after inspection, work travels to sub-sub-assembly bays feeding into main assembly lines, stock being largely stored in station areas as close to final assembly position as possible. So much for japanning procedure. Equipment is most modern. Procedure is standard. Controls are automatic.

Automatic pickling machine for porcelain enameling

The company was just completing installation of an automatic pickling machine when I was there. It is modern and efficient in every respect. The set-up is 200′ U-type, endless flow, overhead conveyor type pickling arrangement, using standard cleaning procedure in a sequence of cleaning, rinsing, acid, and neutralrizer tanks. Its most unique characteristic is the cable lift device. Work passes through pickling, loaded in 2′ x 30″ x 60″ baskets spaced at 54″. These lift, move and lower the baskets through the tanks of the pickling sequence by means of cable lift. A pusher bar

energizes dogs on the cable trolley, which automatically lifts or lowers each basket through the tank sequence by this cable action.

In setting up the pickling room procedure, considerable thought was given the type of steels to be run. Hot rolled steel comprised about 90% of the tonnage run. This was a very open grained steel that was attacked rapidly by sulphuric acid. After trials, it was found that 5% acid at 140° temperature for five minutes gave the best results. The nickel tank is controlled at 1 oz. of single nickel salts per gallon, with a pH of 3.5, the ware remaining in the solution for six minutes. The neutralizer is carried at .25, with caustic soda for a neutralizing agent, the ware remaining in the tank for ten minutes at 212°F. From pickling, work is trucked to transfer area of the porcelain enameling conveyor line.

R. B. Evans is in charge of porcelain enameling. *Finish* wrote him up in the May, 1946, issue, when he joined the company. He has almost twenty years experience in the porcelain enameling industry back of him.

Mill room has well equipped control laboratory

The 120′ x 20′ porcelain enamel mill room is in the basement, serviced by elevators. It contains two 6000 lb. and one each 2000, 1000, 500 lb. mills, together with a 100 lb. sample mill. Low firing ground coats are used for steel. Enamels for such black cast iron parts as range grates are fired at 1380°F.

Out of the mills, the mix is pumped through centrifugal sieve and magnetic separator to storage tanks above the main floor. Tanks of 60 and 120 gallon capacity are loaded here and moved to the spray conveyors. The mill has a well equipped control laboratory. Latest equipment, such as reflectometer, spectrometer, and thickness gauge, are included equipment. Fused samples are made of each mill mix for laboratory checks.

The entire porcelain enameling setup is conveyorized. There are 1700′ of furnace chain, 490′ of dipping conveyor, and four six strand ribbon conveyors of 135′ each. Furnace chains travel at 16′/min., the others at from 14′ to 18′/min. and all chains have variable speed drives.

Three types of conveyor tools

Three types of hangers are used on the conveyors: (1) Easel type, fan-styled, three-fingered hangers out of the ground coat dip. These provide proper slope for the ware to drain properly. (2) A coat hanger type with 10 notches, accommodated by varied length hook-hanging wires, to carry the ware out of ground coat oven. (3) A seven shelved carrier-rack type, 40″ x 24″ x 36″ high; its shelves having wood covering. These carry the ware from the spray conveyors to the furnace chain.

Because of sheet steel shortage, the plant was operating but one furnace when I was there, running both steel ground and finish coat ware side by side using the same time and temperature cycles. *(Standard practice as described later will include two furnaces.)* Firing was at 1540°F. Stove tops are 16 ga. and sides of 20 ga.

Carrying conveyor from spray lines to continuous furnace chain. The shelves of this seven-tier rack type conveyor are wood covered for ware protection.

hot or cold rolled steel or enameling steel, depending upon what is obtainable. Installation of ground coat dryer equipment was just being completed when I was there.

The ware to be porcelain enameled comes loaded on tote boxes, of the same type on which it was escalated from the basement, to either the hand dip or automatic spray line for ground coat, then passes through the ground coat continuous dryers operating at 350°F. These lines are parallel and 160′ long. Both use standard practise. Flat ware is automatically sprayed. The hand dip tank is on dollies to facilitate wash out.

Ware is then hung on the easel hangers of the furnace conveyor line. The chain moves 16′/min. into the ground coat furnace. This is a U-type, gas-fired, continuous furnace, 100′ x 15′, with a 48′ burning zone. The time cycle is three minutes at 1540°F. Both ground coat and cover coat furnaces are exactly the same. Both are fired by 11 proportional-mix gas burners.

Low firing ground coats are used, as ground coat and finish coat are fired on the chain at the same time. All ground coat is sprayed with an automatic spray machine. The ground coat is applied at 14 grams per sq. ft. on the face, with a specific gravity of 1.68. Whites are sprayed with an automatic spray machine at 40 grams per sq. ft., with a specific gravity of 1.88.

Coming from ground coat furnace, ware is conveyed south 275′ along the east aisle and, by turn around, about 125′ back to transfer point for finish coat spraying. Work is here transferred to the ribbon-type conveyors for cover coat spraying.

There are two cover coat spray lines and one acid resisting coat line involved in this area. Finish coat lines are 150′ long, set in parallel, and employ identical equipment. The ribbon conveyor travels approximately 30′ from transfer point to plenum room. There are two. Each contains one automatic 11′ x 14′ spray booth and two 6′ edging booths.

Plenum chambers for finish coat

This pressurized, air-controlled plenum room is of latest design. Its blower setup and suction exhaust are standard. Temperature is maintained at 74°F. There is a slight outward pressure, preventing inflow of any airborne contamination. All fumes are exhausted above roof to open air.

Coming from finish spray, the ware on ribbon conveyor passes through a flat, continuous dryer 50′ long. Dryer temperature is 350°F. Firing is by natural gas.

Out of the finish dryer, ware is transferred to shelf-type carriers and travels along an L-shaped brushing ring. Finish and ground coat furnaces discharge in opposite directions. Each is facilitated by a furnace conveyor chain that travels similarly but in juxtaposition, like two "Ls", the one inverted in relation to the other. Temporarily, using one furnace for both coats, finish transfer is made to furnace line at the east end of the brush ring carrier line. Regular practise, however, will be to transfer this at the discharge point in front of finish dryer at the west end of the line. Ware then moves through finish firing, using identical procedure as with ground coat.

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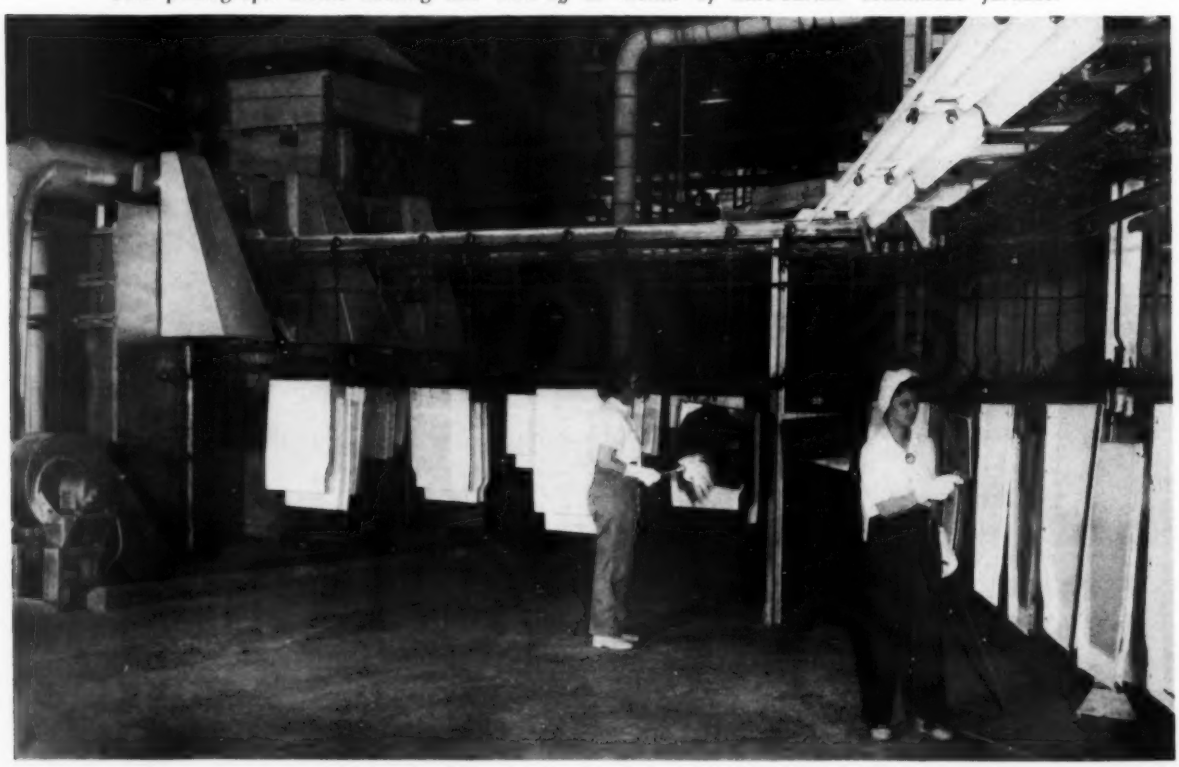
This photograph shows dusting and blow-off at mouth of nine-burner continuous furnace.



The properties of porcelain enamel
and their effect upon enamelware

By H. D. Carter, B. W. King and H. C. Draker

THE HARSHAW CHEMICAL COMPANY, CLEVELAND, OHIO

Part III

SECTION V. FURTHER ADJUSTMENT OF EXPANSIONS

Exclusive feature finish

1. Lower cover coat expansion — variable practice

Since it was found that the addition of a final cover coat with suitable expansion would not decrease thermal shock resistance, it was thought advisable to note the effect of using one with still lower expansion. To this end cover coat C0 was made, having a calculated expansion of 232 and applied over a ground coat of Blend A and a first coat of C3.

Lots 46 - 49 were made from this combination. Cover coat application was varied as was the firing treatment. See results in Table XI.

Thermal shock

In most cases thermal shock resistance shows an increase over the same combination using C1. Judging from lots 46, 47, and 48, it is shown that the final coating should be of sufficient thickness (or strength) to withstand the strains produced. Although lots 46 and 49 checked within one test cycle, it is possible that the slightly underfired condition of C3 in lot 49 may be responsible for the lower result obtained with that lot.

Impact

The results for impact resistance checks closely for all of the lots even though there was a variation in treatment. The measured thickness was also within a relatively narrow range.

2. Higher expansion in ground coat blend

Using C0 over C3 as cover coats, the expansion of the ground coat was increased from a calculated value of 294 to 308 by substituting 20 parts of G4 for the 20 parts of G1 in Blend A. It has been previously mentioned that G4 tended to give a poor surface, although it was not as bad as G5. Firing tests were made of this new Blend D and it was found that a normal surface could be obtained by firing at 1600° F. for 5 minutes. At this point the adherence was comparable to that produced by Blend A when fired at 1540° F. for 3 minutes. In both cases bonding was good across the bottom and up the sides, but poor at the radii.

The effect of thickness was again noted by testing after both the first and final cover coat. The results are given in Table XII *(page 52)* and shown in Figure XII.

Thermal shock

For both the first coat C3 and the final coat of C0 over C3, the results for Blend D are higher than for Blend A. There is a slight advantage in the thickness of first coat samples indicated for Blend D but, judging from previous results, the increase in resistance will be largely due to the increased ground coat expansion.

In work of this nature, results may not be too conclusive on a limited number of samples. However, throughout this entire investigation a very definite relationship has been established. It has been shown that resistance to thermal shock depends primarily upon the expansions of the enamels in use. Resistance of ware having two cover coats will decrease, remain the same, or increase with the application of the second coating, depending upon the manner in which the expansions have been balanced.

Impact

In this series, impact results check within an average of approximately one inch which is undoubtedly within the accuracy of the test. This small

TABLE XI.

THERMAL SHOCK — IMPACT

LOWER FINAL COAT EXPANSION: PRACTICE VARIABLE

Lot	COATING			Inside Thickness	Thermal Shock	Outside Thickness	Impact
	Blend A	C-3	C-0				
46	Reg.	Reg.	Reg.	14.8	13.0	14.4	13.6
47	Reg.	Thin	Heavy	13.0	12.6	13.7	13.1
48	Reg.	Heavy	Thin	14.1	9.8	15.6	13.6
49	Reg.	Reg.	Reg.	15.0	11.4	14.6	12.6

Ground Coat: Blend A; First Cover: C-3; Second Cover: C-0; Steel: B.

All Firings: Lots 46, 47, 48 1540° F. — 3 minutes
Lot 49: Ground Coat: 1540° F. — 3
First Cover: 1500° F. — 3 Underfired
Second Cover: 1500° F. — 3

Heavy coatings were badly streaked. Five pans for each test.

difference along with differences in thickness is in favor of Blend D over Blend A for both coats. Other isolated cases have been discussed where impact resistance appeared to be dependent upon ground coat expansion. There, however, has been no definite trend in this relationship. With G1, G2 and G3, values appeared to decrease with increased expansion (Table VI); with Blends A, B and C, there was a decrease for lower expansions (Table VIII); and the results are in the same order for Blends A and D. Thickness of outside coatings have been disregarded in these considerations.

Reviewing Figures VI, IX, and XI, the data reveal that the thickness of coating is the controlling factor for impact resistance as measured by this test. They also show that neither ground nor cover coat expansion has any influence upon this value.

SECTION VI: COVER COAT SOLUBILITY

1. General

It is well known that certain variations in practice will exert an influence upon cover coat acid resistance. Factors which were considered for investigation were: (1) percentage of clay; (2) type of clay; (3) fineness of milling; (4) smelting; and (5) firing. Trials were made using frit C1 to cover variations in amount and type of clay as well as fineness of milling. To make samples for this purpose, 1000 gram millings (Table I) were used. The enamel prepared in this manner was sprayed upon ground coated discs and subsequently fired. The results from these tests were erratic and showed no definite trends even though they undoubtedly existed. Repeat trials were made on one series with unsatisfactory results again being obtained. In reviewing the results obtained, it appeared that when using an enamel of comparatively low solubility any variation would consequently be small and probably be within the accuracy of the tests. Therefore, work along this line was discontinued.

2. Effect of first coat solubility

Although the solubility test on C1 did not lend itself to a systematic investigation, conditions have been observed in regard to the type of enamel used for the first coat and their effect upon the solubility value for the finished ware. The enamels involved were made from commercial frits of the following types:

Enamel A (Zircon frit): Coating is completely removed before end of test.

Enamel B (Superopaque antimony frit): Solubility value of .0103 grams per square inch.

Enamel C (Ordinary antimony frit): Solubility value of .0056 grams per square inch.

Enamel D (A. R. Antimony frit): Solubility value of .0008 grams per square inch.

Using enamel D, which is quite A. R., over each of the other enamels, the solubility is affected in the following manner:

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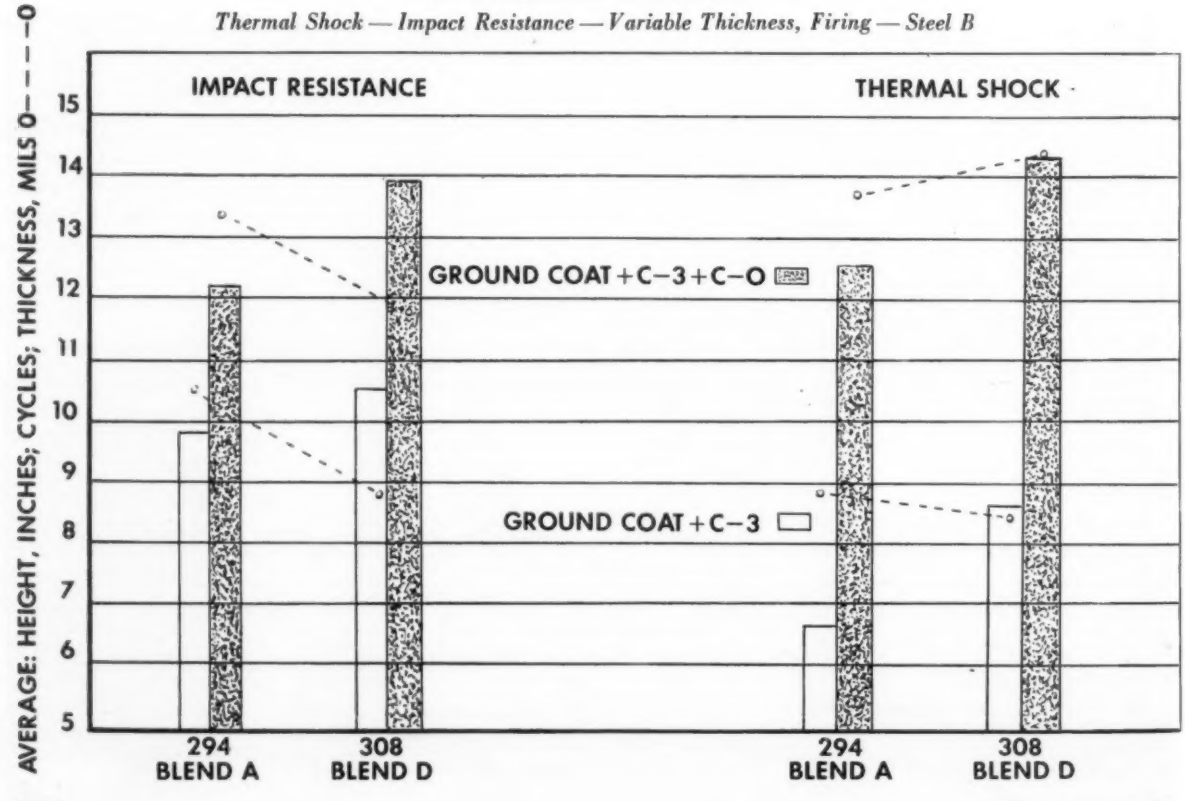
FIGURE XII

Final Adjustment of Expansions

Thermal Shock — Impact Resistance — Variable Thickness, Firing — Steel B



From the Editor's mail . . .

the CAP air marker project

Finish:

On behalf of Squadron 611-2 of the Civil Air Patrol, I want to take this opportunity of expressing our sincere appreciation for your personal interest in the air marker project which we have scheduled for development at Wheaton, Ill.

Had it not been for your publication, *finish*, and your personal selling of the idea, we would not have thought of the possibilities for using porcelain enamel steel to get a permanent and maintenance-free marker. The sponsorship of the idea by *finish* has, as you know, resulted in cooperation by members of your industry to the extent that we now have a completed marker ready for installation. We will complete this job in such a manner that it not only will be a valuable contribution to Wheaton and to the flying public, but to the porcelain enameling industry also.

We hope you will join us at our dedication ceremonies on May 4, so that we may have the opportunity of thanking you in person for your assistance.

2nd Lt. G. M. Glidden
Operations Officer
C. A. P. Squadron 611-2
3035 West Lake Street
Chicago 12, Illinois

---

interested in forming lubricants

Finish:

Interested we read in "*finish*," January issue, the article of your collaborator covering forming lubricants.

We should be grateful if you would kindly induce the competent firms to suggest us some suitable forming lubricants which can advantageously be used for specially heavy deep drawing operations.

We are manufacturing ourselves bath tubs by deep drawing, and for these operations we are especially interested in such lubricants.

Trusting you will comply with our request, and thanking you in advance for your endeavors, we remain . .

Soc. An. Smalteria e
Metallurgica Veneta
Bassano del Grappa, Italy

We leave it in the good hands of the drawing compound producers to see that this company receives the information that is requested. The address given is sufficient.

---

interesting and instructive

Gentlemen:

I always read "finish" from cover to cover. It is interesting and instructive.

E. L. Adams, Vice President
The Toledo Porcelain Enamel
Products Co.
Toledo, Ohio

---

want to become subscribers

Dear Sirs:

Our mutual friends, Messrs. Ferro Enamels, Ltd., England, have drawn our attention to, and shown us, your very excellent publication, "*finish*."

We should like to arrange to immediately become subscribers. Will you please let us have the necessary instructions to enable us to fix this up at your earliest convenience?

Noel J. Crowe, Managing Director
Wallis & Co. (Long Eaton), Ltd.
Nottingham, England

---

the building angle is big

Gentlemen:

My interest is ceramic design in all forms. You have a very excellent trade paper. The trade paper printing is overdone in the United States, but the Ceramic Industry (Enamel field) has a real place for this item — "*finish*" — Would suggest that a plan be worked out to place this paper in every architect's office throughout the land. The building angle is big and you are doing a real splendid piece of work in stressing this angle for the trade.

Walter A. Weldon,
Coordinating Engineer
Locke Insulator Corp.
Baltimore, Md.

***Finish* does go to some of the more prominent architects who have indicated an interest in porcelain enamel as a building material. We must leave complete coverage of the architectural profession to the architectural magazines.**

West Coast preference

Finish:

I endeavored to feel out the Western accounts as to their preference and rating of the various publications now existing within the enameling industry . . . They seem to feel that each type of publication serves a particular purpose . . . *finish*, on the other hand, is recognized as the industry's magazine — a magazine that gives an unprejudiced and overall picture. Those West Coast accounts feel that *finish* plays a very definite part within the industry, and also believe it has possibly done more to promote porcelain enamel than any other publication.

A *finish* advertiser

We greatly appreciate this comment, particularly from an advertiser who has taken the trouble to conduct a personal survey among enameling plants in this fast-growing section of the porcelain enameling industry.

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enlightening and interesting

Finish:

. . . I have found the periodical, *finish*, to be most enlightening and interesting. Being a student of the porcelain enamel industry, and at present employed by the Clyde Porcelain Steel Corp., I very much want to receive your magazine each month. It would be greatly appreciated if I were placed on your list . . .

William T. Winand, Jr.
Clyde, Ohio

The management team—
chairman to foreman

a significant management statement on a current industrial problem

By Fred B. Ortman • PRESIDENT, GLADDING, McBEAN & CO., LOS ANGELES, CALIFORNIA

WEBSTER defines "Management" as, "The judicious use of means to accomplish an end"; "Judicious" as, "Directed or governed by sound judgment"; and "Team" as, "A number of persons associated together in any work."

Combining these definitions in plain words, the subject, "Management Team — Chairman to Foreman," would seem to be, "How can all levels of management from the Assistant Foreman to the Board Chairman best work together to determine what *should be* done and to see that it *is* done?" The concept of a team implies a well defined relationship between its members — the most outstanding of which is leadership. No two human beings engage in any common pursuit without, consciously or unconsciously, one assuming the role of leader. Each member of a smoothly functioning team must therefore accept and acknowledge leadership. Without leadership, an army would become a mob; a football team, a pushover; and a business enterprise, a failure.

The problem

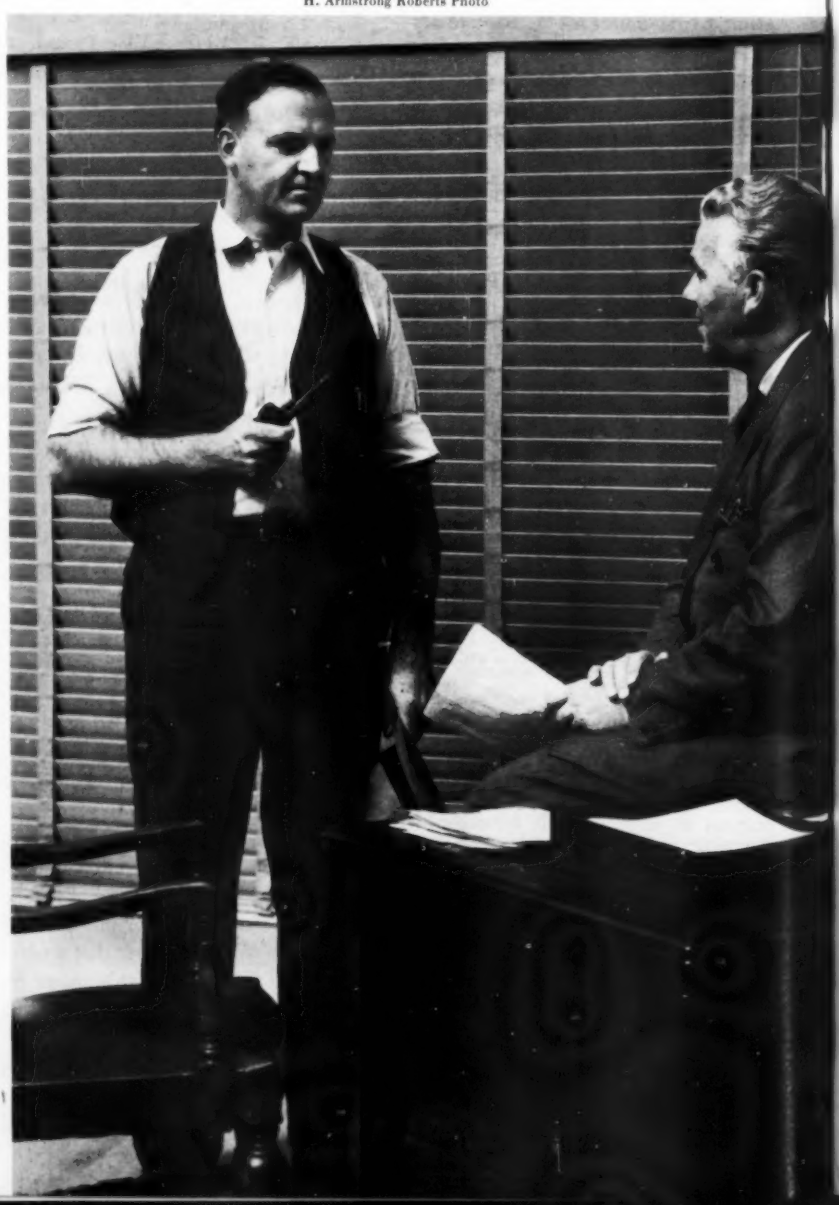
It seems appropriate that our attention should be mainly focused on one important phase of the subject; namely, are the lower levels of supervision definitely and wholeheartedly on the team and, if not, what can top management do to place and keep them there?

What has given rise to this problem?

Development of industrial organizations over the past two or three decades, greatly accelerated during the war period, has resulted, generally speaking, in a marked change in the status of lower level supervision, generally referred to as the *Foreman*. This change has been very clearly delineated by Albert Kopf in an article in the February, 1946, issue of *Modern Management* entitled, "Don't Fence Him In." Mr. Kopf lists ten major functions and responsibilities of the old-time foreman and compares these with those of the present-day foreman in the so-called modern industrial organization.

Lines of communication must be maintained through personal contacts.

H. Armstrong Roberts Photo



"The Foremen's responsibilities in years past generally were as follows:

1. Hire and fire as the need justified — unhampered by seniority — keeping efficient employees.
2. Train new employees.
3. Shift operators to meet production requirements.
4. Supervise safety.
5. Establish and maintain housekeeping rules.
6. Establish standards and rates.
7. Keep simple records.
8. Maintain human relations on a man-to-man basis.
9. Settle grievances.
10. 'Run the job,' as a *part of management.*

Today the Foreman is, too often, 'fenced in' to a position where:

1. Hiring is done by experts. Firing is done in accordance with a contract.
2. Training is done by special training program.
3. Shifting to other jobs, as required, is restricted by seniority. Promotions are according to seniority.
4. Safety measures are established and supervised by engineers.
5. He still is chief janitor on housekeeping.
6. Rates and standards are set by engineers and approved by contracts.
7. He has more record keeping than ever.
8. He now has morale problems on top of human problems.
9. Grievances are settled by contract provisions.
10. He is surrounded, by-passed, and submerged by regulation, policy, and contract. Top management (while holding him responsible for results) frequently forgets that he is a member of the team and to tell him all the plays."

It is not the function of this article to compare the efficiency of the older form of organization with the new. It is, however, important that we recognize the gradual changes that have taken place, with particular reference to some of the acute problems that might flow from our failure to realize the effect that these changes may have on the morale of the lower levels of supervision and the efficiency of the organization. Unless the foreman can be made to feel that he is clearly and definitely a part of management, he is apt to become vulnerable to the pressure for unionization.

To conceive a successful management team with any members thereof, such as the foreman's group, having a divided allegiance is just as unthinkable as to visualize a football team with the backfield following coach's instructions conveyed through the quarterback, and the line being directed by shouts from the grandstand.

Top management's responsibility

If, then, we have a clear understanding of the problem, what is top management's responsibility toward its solution? This, it seems, divides itself into the following major subdivisions:

A. Top management must clearly delineate the scope of responsibility for every supervisor and his relation to every other supervisor through the use of organization charts, job descriptions, clear definitions, etc.

B. Proper lines of communication must be established and maintained throughout the entire supervisory staff so that company policies, executive orders, etc., are clearly and promptly transmitted. This can be accomplished by:

(1) Personal contacts and maintenance of open door policy.

(2) Staff meetings not so frequent as to become burdensome, but frequent enough to keep everyone up to date.

(3) Adequate office headquarters with provision for prompt telephone and mail service.

(4) Off time informal get-togethers.

C. Cultivate the dignity of the foreman's position, by:

(1) Recognizing his job as a profession for which he is trained.

(2) Providing recognition and prestige in small ways such as adequate office headquarters, marked parking spaces, right to sign certain documents, etc.

(3) Extending to all levels of supervision the same vacation, insurance, retirement or profit-sharing programs that are available to any level of management.

(4) Including him as a vital part of your labor relations program, encouraging him to settle grievances at his level, keeping him better informed concerning union negotiations than the union keeps informed its labor steward in his department.

(5) Avoiding the use of packaged foreman's training courses handled in such a manner that he is treated as a student "going to school."

(6) Finally, and most important, by whatever plan of compensation is in effect, seeing to it that the take-home pay of a supervisor always exceeds that of any employee under his jurisdiction.

D. Provide opportunity for, and encourage self-improvement through, education. Some of the means by which this can be brought about are as follows:

(1) Encourage all levels of supervision to participate in educational programs offered under sponsorship of the company.

(2) Encourage attendance, at company expense, at industrial conferences dealing with problems of management.

(3) Train staff executives such as personnel men, accounting men, industrial engineers, etc., not to "talk down" to the foreman but, rather, take sufficient time and patience to instruct and educate him in his particular field.

(4) Provide, sponsor, and encourage a formal organization of all supervisors, of all levels, and from all departments, where all can meet periodically on a common ground for educational and recreational purposes. These clubs must not be dominated by top management, but must be managed and conducted by supervision, *with full support and interested attendance by upper levels.* Participation by top management should be with a view to sincerely conveying to the foreman the feeling that he is, in fact, regarded by top management as a vital part or member of the management team.

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The Washington round-up

By Wilfrid Redmond

CONGRESS, in a last minute burst of speed, extended priority and allocation powers over tin and antimony, and a few other scarce commodities, until June 30, 1947. The extension bill was signed by President Truman before midnight on March 31, the date of expiration of the Second War Powers Act.

The three-months extension was recommended by the Senate Judiciary Committee as a temporary measure pending more complete study of the need for controls over a longer period. The Committee criticised Government officials for not supplying information requested by the Committee, and indicated this data would have to be submitted before any further extension of controls would be recommended. The House Judiciary Committee reported out a bill extending controls over tin and antimony until December 31, 1947; but in a conference with the Senate, the House accepted the Senate extension plan.

The extended controls plan provides that only commodities under control at the time of the expiration of the Second War Powers Act, on March 31, shall be subject to allocation and priority regulation. It seems likely that another extension of the controls over tin and antimony will be considered by the Congress before adjournment, which Republican leaders have scheduled for June 30.

The following CPA orders remain in effect, as a result of the extended powers voted by the Congress:

M-43 — Restricts uses of tin and provides for allocation of pig tin.

M-112 — Provides allocation controls over antimony.

M-63 — Restricts imports of tin.

At the same time, CPA revoked PR-32, which established inventory controls over such products as washing machines and refrigerators. Allocation powers over steel and other items are discontinued. Suppliers of soda ash, for instance, are no longer under obligation to continue voluntary rationing of materials.

CPA also transferred Veterans' Housing Program Order 1 and all other orders and regulations in support of it to the Office of the Housing Expediter. Included in these are all provisions, heretofore administered by CPA, restricting construction, channeling scarce building materials into authorized residential construction, and providing priorities and allocation assistance to producers of materials required by home builders.

CPA officials, in testifying before Senate and House Committees, said that unless controls over antimony are continued, the industries using the metal would experience severe shortages before the end of 1947.

The electrical appliance and automobile industries have been actively in support of a measure to suspend the 4 cents a pound import tax on copper. The bill, carrying a suspension of the tax for two years until March 31, 1949, passed the House, but is held up in the Senate Finance Committee by an amendment to reduce the term of suspension to one year, and to limit the importation of copper to 400,000 tons during that period. A compromise is indicated, with the House fixing the suspension at 18 months. The controversy is between the fabricators of the East and small copper producers of the West. Western Congressmen fear a long suspension of the tax because it might result in a flood of copper in from one to two years which would depress the price and put the small mines out of business. Eastern brass mills say the supply of 80,000 tons of copper a month is out of balance with a demand of 130,000 tons a month, and that production for 1947 is estimated at 950,000 tons as against requirements of 1,400,000 tons. Even with the tax off, they do not expect

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Value of shipments of porcelain enameled products for February, 1947:

	Receipts for enameling done on a jobbing basis.	Shipments of finished enameled prod.
Total	$882,143	$6,151,789
Signs	62,398	306,144
Stove parts (sold as such)	182,129	552,047
Refrigerator parts (household and commercial)	169,771	403,705
Reflectors, including fluorescent reflectors	*	456,865
Cooking, household and hospital utensils	7,886	2,917,095
Table tops (kitchen cabinets, dinette sets, etc.)	75,108	407,759
Store fronts and other architectural porcelain parts	*	119,877
Washing machine parts	160,727	709,635
Plumbing ware	81,400	xxx
All other	142,724	278,662

* Receipts were not given in order to avoid disclosing operations of individual companies.

Value of shipments of porcelain enameled products in February as compared with January, 1947:

	February	January
Total	$7,033,932	$7,865,427
Signs	368,542	383,067
Stove parts	734,176	825,241
Refrigerator parts	573,476	538,070
Reflectors	456,865	599,573
Cooking, household and hospital utensils	2,924,981	3,479,821
Table tops	482,867	513,509
Store fronts and other architectural porcelain parts	119,877	159,737
Washing machine parts	870,362	787,675
Plumbing ware	81,400	133,793
All other	421,386	444,941

Plastic drop hammer punch dies

a record of production results from dies made from an ethyl cellulose material

By Gilbert C. Close • LOS ANGELES CORRESPONDENT FOR FINISH

FOLLOWING an intensive research program, engineers at the El Segundo, California, Division of Douglas Aircraft Company, announce development of all-plastic drop hammer punch dies that are far superior to conventional antimony-lead dies. They are easier and cheaper to produce, more wear resistant, easier to reface, and will turn out better work. Furthermore, these dies have been employed in actual production forming for a period sufficiently long to substantiate experimental information.

An ethyl cellulose material (Ethocell by name) is employed. This plastic material comes in the form of a wax component, Fraction "A", and a granule component, Fraction "B", which must be thoroughly mixed in the ratio of 1 to 4 respectively, prior to melting.

Melting temperature and time must be closely controlled for best results. A thermostatically controlled melting pot is recommended. Temperature of the mix is raised slowly to 420°F. and held constantly at this point for exactly 20 minutes. Deviations in excess of plus 0° or minus 5°F. will affect the quality of the finished die. Just prior to pouring, temperature of the melt is reduced as rapidly as possible to 360°F. by directing compressed air against the melting pot walls and surface of the material. This rapid cooling aids in the elimination of air bubbles that otherwise might result in a porous die.

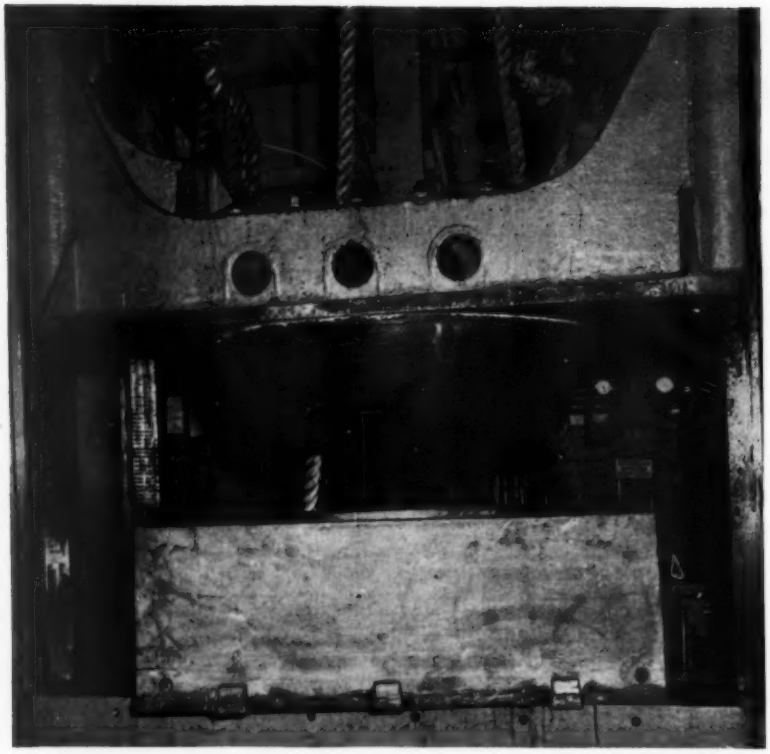
The antimony-lead lower half of the die is used as a mold. Prior to pouring, this lower die section is shored to approximately four inches above its highest point, and metal inserts for attaching the plastic die to the drop hammer head are put in place. It has been found that all sharp corners on the metal inserts should be ground to a radius to prevent accumulation of internal stresses during settling of the plastic. Boards lined with sheet metal template stock are used for shoring.

Compensating for dimension loss

Considerable shrinkage will occur during initial setting of the punch die. When the die is cold, it is hoisted far enough to permit heating of the face areas with a hand-held gasoline torch to approximately 320°F. It is then reseated in the lower half, and pressure is applied with cabinet makers' clamps or large "C" clamps. This pressure causes the softened surface of the punch die to flow sufficiently to compensate for dimension loss during initial setting. Pick-up of the punch die during this reseating or "searing" operation is almost microscopic.

At this point, the cast plastic die is ready for use. Planishing opera-

Note smoother finish on cowling, on left, which was formed by a plastic die. Right cowling was formed with a lead die.



Here is a cast plastic cowling punch die as it appears when installed in a drop hammer.

Photos courtesy Douglas Aircraft Company

This cast plastic punch die was removed from the lower lead die which was used as a mold.

tions are entirely eliminated, and whereas lead dies must be ground away to provide metal clearances on sharp contours, the inherent resiliency of the plastic die permits sufficient "give" at the moment of impact to provide such clearances automatically.

Author's Note:

While most production work accomplished by Douglas engineers using the plastic punch press dies was on aluminum parts, experimental data indicates the same results could be anticipated when forming sheet iron and stainless steel parts. Forming pressures, hammer weights, etc., would not vary appreciably with either type of metal. In fact, when proper forming lubrication is used, actual contact between the die and metal is reduced to a minimum. Other factors would remain constant regardless of the type of metal being formed.

Punch die refacing a simple process

When the plastic punch die becomes worn beyond tolerance limitations, or when the surface becomes injured in some manner, refacing is but a repetition of the "searing" operation carried out when the die is first cast. Both die halves are removed from the hammer, the surface of the plastic die is heated to approximately 320°F., then reseated in the lower half and pressure used. Resulting flow of the softened material restores lost dimensions, and fills surface dents caused by injury.

The current market price of the plastic used in these dies is 75¢ a pound, while that of antimony-lead is 7¢ a pound, but as the lead is almost eleven times as dense as the plastic, overall costs are in favor of the latter. Additional savings accrue from time saved and operations eliminated during initial casting operations.

Ten to one ratio for die life

The greatest saving, however, is realized from the long-life characteristics of the plastic dies. In general production work, the plastic die will produce approximately 10 times as many parts without attention as its antimony-lead counterpart. One such die now in use at the Douglas plant

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Pacific Coast enamelers meeting

By Gilbert C. Close

MEMBERS of the Pacific Coast Enamelers Club met for the second time this year, March 28, at Skully's restaurant in Los Angeles. Forty-six members and guests were present. After doing justice to large portions of fried chicken, President Glen Fulton called the meeting to order. He then introduced and welcomed Lou Hart, of Ferro Enamel Corporation, into the West Coast fold. Lou has been with Ferro for a quarter of a century, and is well known to the enameling industry at large.

R. R. Sherrill and George Pfleger announced progress on plans for the forthcoming "Fiesta Meeting," the club's yearly recreational jaunt. It will be held at the Monticello Golf Course, several miles east of Los Angeles. The date is as yet tentative, but efforts will be made to hold it a week prior to, or after, Decoration Day.

Fulton pointed out that the club's first year was drawing rapidly to an end, and suggested election of a nominating committee to select candidates for next year's officers. On a majority motion, Fulton was instructed to appoint a nominating committee at his own discretion. The following members were named: M. E. Blackburn, California Metal Enameling Co.; R. W. Armour, Chemical Process and Engineering Co.; A. G. Sattler, U. S. Porcelain Enameling Corp.; H. V. Thomas, L. H. Butcher Co.; Roy L. Hastings, Gaffers & Sattler, and Larry Bohan.

Dr. Abbott Kaplin, head of the Extension Service, Institute of Industrial Relations, University of California at Los Angeles, was introduced by Fulton as the speaker of the evening. Doctor Kaplin is an internationally known figure in his field, and held many important posts prior to his association with U.C.L.A. Though his subject did not touch upon the physical aspects of enameling, his views on industrial relations and labor-management associations were of vital interest to everyone present.

Kaplin opened his talk by stating that current labor-management problems must be approached objectively, with no reference to past experience. Conditions that existed only 20 years ago are not to be found in the present industrial picture. One of the greatest jobs facing the industrial relations expert today is to break down prejudices between labor and management, or, more specifically, to do away with the too liberal and too sympathetic viewpoints with which average persons regard labor-management disputes.

In an academic vein, Doctor Kaplin traced the history of labor-management movements to illustrate that current problems are not new. He stated that the closed shop problem began as an issue in 1792. Strikes occurred at this time, and resulted in the first employers' organizations. Dragged into the courts as an issue in 1805, the closed shop was held to be a combination in restraint of trade.

Poor labor-management legislation at this time could do great harm, Kaplin stated. He went on to point out that the current economic situation is passing through an acute phase. There are 8,000,000 less persons employed now than during the war-time peak. This represents a tremendous reduction in current purchasing power. High prices and strikes have dissipated a large proportion of the much heralded postwar purchasing power. Furthermore, and without baiting the issue, many companies accumulated huge reserves of merchandise prior to removal of the OPA ceiling prices. This merchandise is now available on the market, but there is a dearth of purchasers. Rather than add to their already large and slowly moving stocks, companies are beginning to curtail employment.

The only visible solution, Kaplin said, is better balance between wages and prices. Neither labor nor management can take a longtime view in achieving this goal. Longtime planning is a tool to employ when conditions are less troubled than at present. Compulsory arbitration will not solve the problem either. In fact, Kaplin declared, compulsory arbitra-

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See photos . . . . . Page 26

Here are some of the members who attended the Pacific Coast Enamelers Club meeting.

Left: R. Fifield and H. H. Eggers, Binks Mfg., and F. W. Fernholtz, Fernholtz Machinery, discuss the speaker's topic.

Below: M. E. Blackburn, California Metal Enameling, meets Lou Hart, Ferro Enamel, newcomer in the West Coast fold.

Above: President Glen Fulton, right, congratulates Dr. Abbott Kaplin for his interesting talk on industrial relations.

Right: W. G. Hall, Armco; A. G. Sattler, U. S. Porcelain, and R. L. Hastings, Gaffers & Sattler, talk things over.

New air marker installation

heralds new market for porcelain enamel

CAP project result of cooperative effort

AS this issue of *finish* goes to press, installation of one of the country's first all-porcelain enameled air markers will have been completed in Wheaton, Illinois, a town of 8,000 population, 25 air miles from Chicago's loop.

The story of this marker, representing cooperative effort between Squadron 611-2 of Civil Air Patrol and members of the porcelain enameling industry, starts as early as 1944, with active participation by porcelain enamel industry members as early as May, 1945. Due to conditions of supply during this period, many months have been required to carry the initial idea to fulfillment, but it is hoped that the completion of this first marker may lead to a rapid broadening of a new field once materials are more readily available.

Late in the year 1944, the officers of CAP Squadron 611-2 were making plans for the selection of a suitable air marker location in Du Page County, Illinois. In January, 1945, agreements were signed with owners of property suitable for such markers. Subsequent to this, authorization was obtained from the 6th Service Command, as then required, for taking aerial photographs, and a preliminary report to the Wing Air Marking Committee was made.

A study was made by the Squadron and Illinois Wing Headquarters of work then being done by North Carolina Squadrons in the handling and placement of *painted* air markers.

Finish article gets attention

In May, 1945, members of the Committee found an article in *finish* suggesting porcelain enameled air markers. This article, entitled "Weatherproof Aero Signs Offer a New Market for Porcelain Enamel," pointed to the possibilities for a great new market for porcelain enameled steel to meet the needs of the ever-increasing airway traffic depending upon contact navigation. It reviewed the work of the Civil Aeronautics Administration in developing standardized markers and showed details of a porcelain enameled marker with segment type construction, for which application had been made for patents by Carl F. Block.

Members of the Illinois Wing Committee then started an investigation of the possibilities for using porcelain enamel. A formal letter, signed by Second Lieutenant G. M. Glidden, chairman of the Air Marking Committee, was received by *finish*, and was printed in our June, 1945, issue under the heading, "Will Porcelain Enamel Get Its Share of the Air Marker Business?" Following is a brief quotation from the letter:

" . . . it would seem to me that the steel manufacturers and the enameling industry might be particularly interested in working with the Illinois Wing of the Civil Air Patrol with the view to setting up one or more test marking units to determine costs and overcome difficulties which usually present themselves with the development of a new idea. . . .

"If the Illinois Wing Committee can render any service in promotion of adequate and economical Air Markings through the good auspices of your magazine, or the industries you touch, we will appreciate hearing from you."

In this way, *finish* put the problem up to the industry and said:

"In his letter, Lt. Glidden offers a constructive suggestion that should appeal to steel producers and enamelers alike. This suggestion, however, calls for immediate action by any one who wants to take the initiative in

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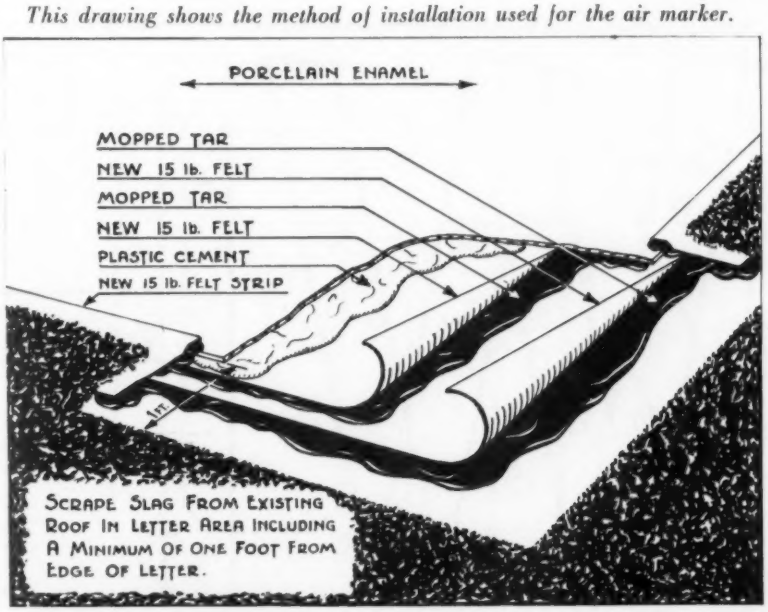
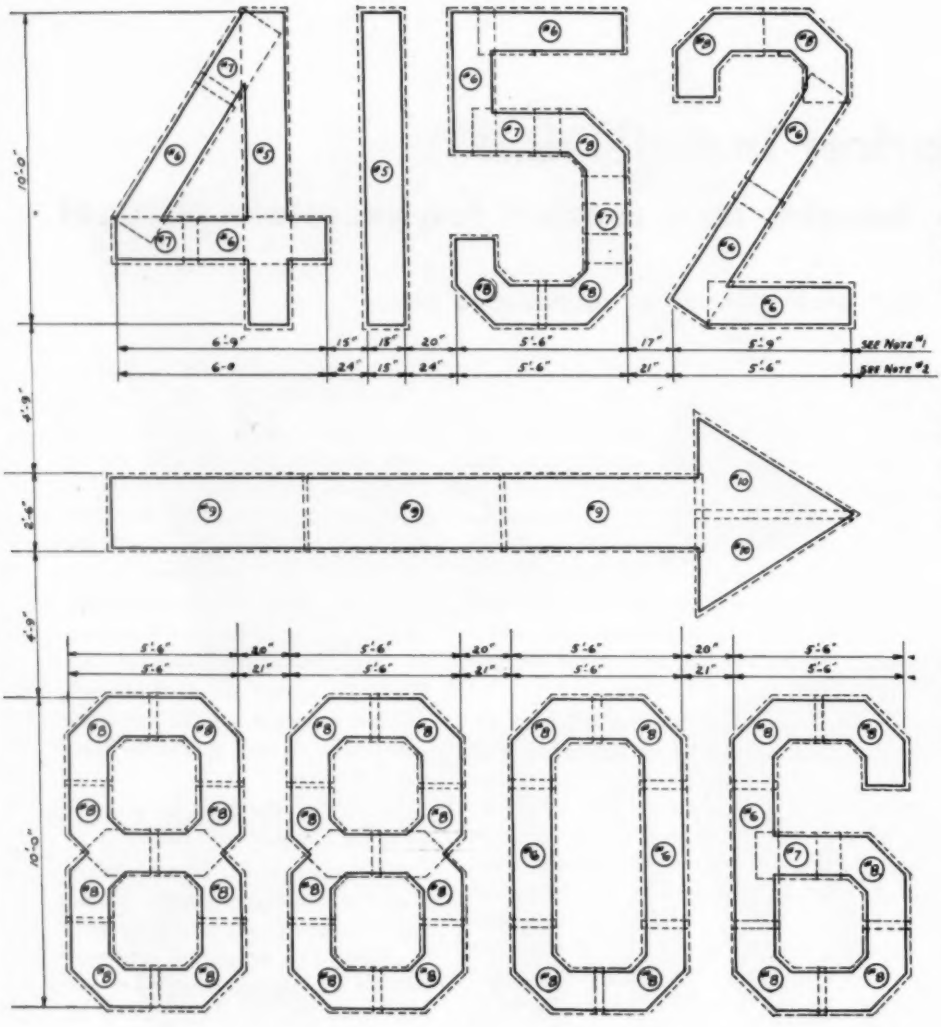
See detailed prints . Pages 28 & 29

This drawing shows the method of installation used for the air marker.



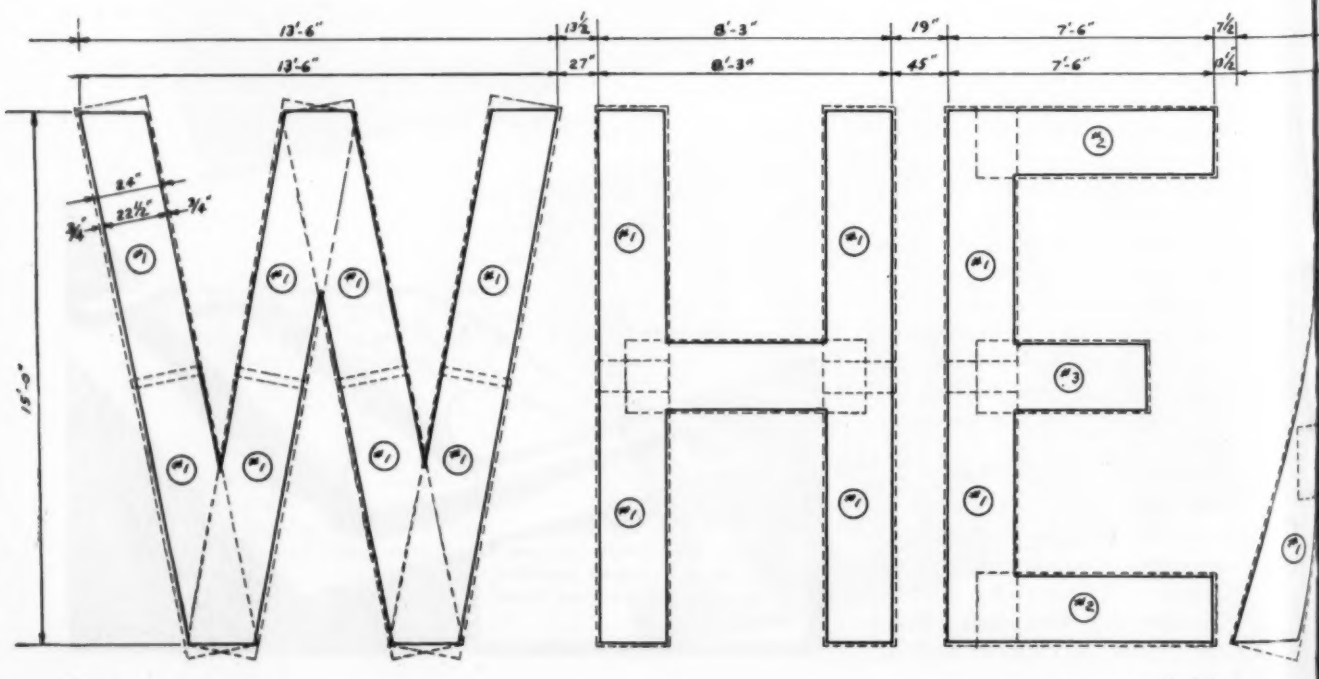


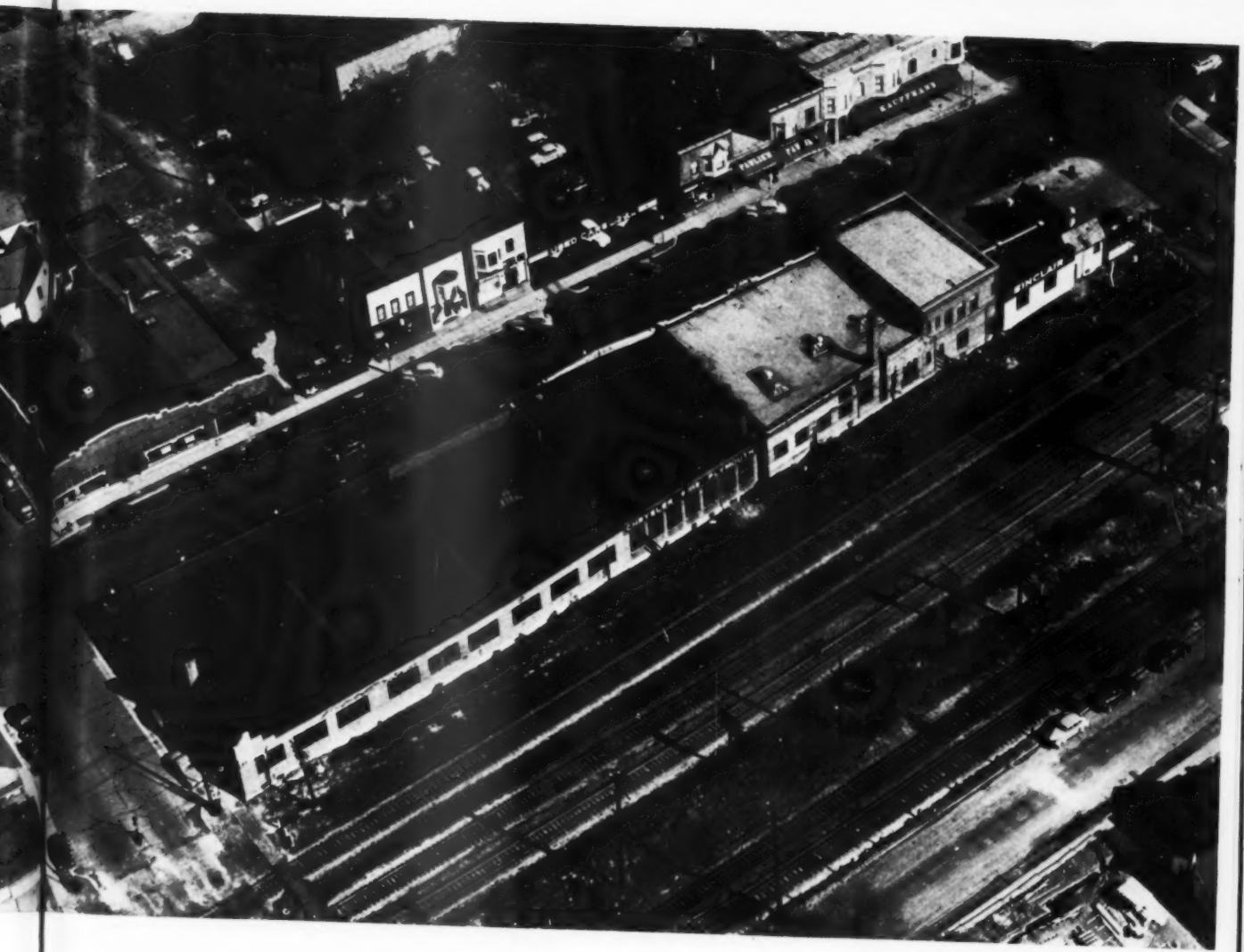
Right: Air photo shows site chosen for porcelain enameled air marker on garage roofs in downtown Wheaton, Ill. Location parallels main line tracks of major railroads.

Left: Drawing shows layout of an arrow and numerals as used for air marking. Shape and dimension of the letters are in agreement with CAA Bulletin No. 12.

Below: Actual drawing of the letters forming the city name as they will be installed at the Wheaton location.

Drawings by
Porcelain Enamel Specialties Co.

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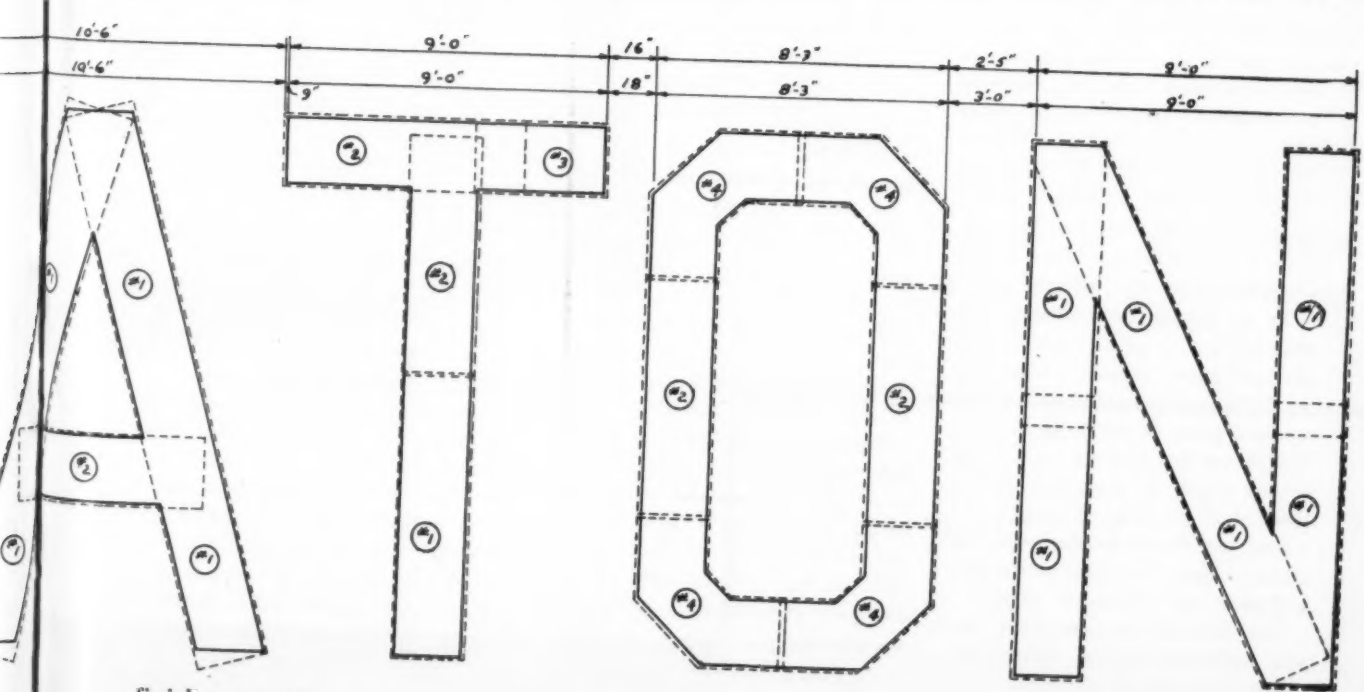

10'-6"
10'-6"
9'-0"
9'-0"
3"
16"
18"
8'-3"
8'-3"
2'-5"
3'-0"
9'-0"
9'-0"

this instance, where the 'door is open.'

"*Finish* will help. If any steel companies, material producers or enameling plants are interested, individually or as a group, in cooperating with Squadron 611-2 in the immediate development of test marking units, we suggest that you contact *finish* immediately or send your communications direct to Lt. G. M. Glidden . . . A meeting can then be arranged with the proper authorities, and plans laid for producing test marking units.

"If this job is done, and done well, it can readily pave the way for national publicity on porcelain enameled markers, and do much to acquaint innumerable other authorities responsible for local marking with the most legible, durable and generally practical material for permanent air markers."

The C.A.A. picture

In early summer, 1945, your editor interviewed Blanche Noyes, air marking specialist, Airways Engineering Division, C.A.A., Washington, D.C., relative to the Civil Aeronautics Administration plans and the market possibilities. This interview was later presented in *finish* under the title, "Will Tomorrow's Air Markers Be Porcelain Enameled?", and illustrated with a typical air marker drawing approved by C.A.A.

In this article, it was pointed out that an air marker, properly designed and installed, will be to people flying personal airplanes and to all pilots on other than regularly scheduled commercial flights what the highway marker is to the motorist. The hazards of contact flying without proper ground markers were referred to.

At the time of the interview with Blanche Noyes, there were 122,884 licensed pilots without considering the Military. Some idea of the market was given in the suggestion by Mrs. Noyes that no town is too large, or too small, to provide a logical point for marking, providing, of course, that the markers are designed along recommended lines so that they will assist, not confuse, the pilot.

One constructive suggestion that was made by Blanche Noyes, and others interested in porcelain enameled air markers, was that anyone designing a marker should have *simplicity* as the No. 1 requirement.

There is nothing in an air marker to warrant "jewelry" or "appliance" inspection. It must be of the proper color; the steel must be completely covered to prevent corrosion, and it should be simple to install. Beyond this there are few requirements.

Cooperation offered by members of enameling industry

The industry challenge, as presented in *finish* and based on Lt. Glidden's letter, brought prompt results. Howard Michel, of Porcelain Enamel Specialties Co., Baltimore, offered engineering service and proceeded to design the ten-unit system of assembly employed in the new WHEATON marker.

Following approval of the layout and installation system by the Committee, offers of materials and services made by other industry members were accepted. Suppliers of materials and services include:

Design and Engineering: Porcelain Enamel Specialties Company

Steel Sheets: American Rolling Mill Company

Frits and Oxides: Pemco Corp.

Fabrication and Porcelain Enameling: J. M. Seasholtz & Sons, Inc.

The completed sign was delivered at Wheaton in October, 1946, but it was deemed desirable by the Committee to postpone installation until the spring of 1947 because of weather conditions.

Description of the Marker

The entire installation is made up of a combination of ten individual units. It is fabricated of 18 gauge steel, to which is applied ground coat and two finish coats of porcelain enamel. Colors are "orange" (War Department Yellow No. 4, Federal Specification TT-P-53) on black.

Blue prints supplied with the job give space dimensions, location of panel laps, etc., and instructions applying to built-up roofs of a pitch not exceeding 1½":12. No screws or nails are used; consequently, it is not necessary to pierce the existing roof.

Installation procedure

Suggested installation procedure includes the following four points:

1. Remove slag from area letter is to occupy, allowing a minimum of 1'-0" beyond entire perimeter of letter. Slag should be removed down to the existing felt.

2. Mop down 2 new plys of 15 lb. felt in this area with pitch or asphalt (depending on the type of roof). Do not mop top layer of new felt.

3. Onto the area to be occupied by letter, trowel a ⅛" thick coating of Asbestos Fibre Asphalt Plastic Cement. This cement should be prepared by adding enough Portland Cement to give it a thick consistency.

4. Set letters into bed prepared as in paragraph No. 3. Where porcelain enamel panels lap, at edges, intersections, etc., apply a liberal coating of Litharge of lead between the porcelain enamel surfaces.

Installation sponsored by local club

In the meantime, arrangements were made with the Lions Club, at Wheaton, to assume the costs of installation. Dedication ceremonies are planned for May 4. The dedication program will include an historical survey of air marking, the introduction of contributors, presentation to the Lions Club by C.A.P., and presentation to the City of Wheaton by the Lions Club. Speakers will include Blanche Noyes, of the C.A.A., and other state and national C.A.A. and C.A.P. officials.

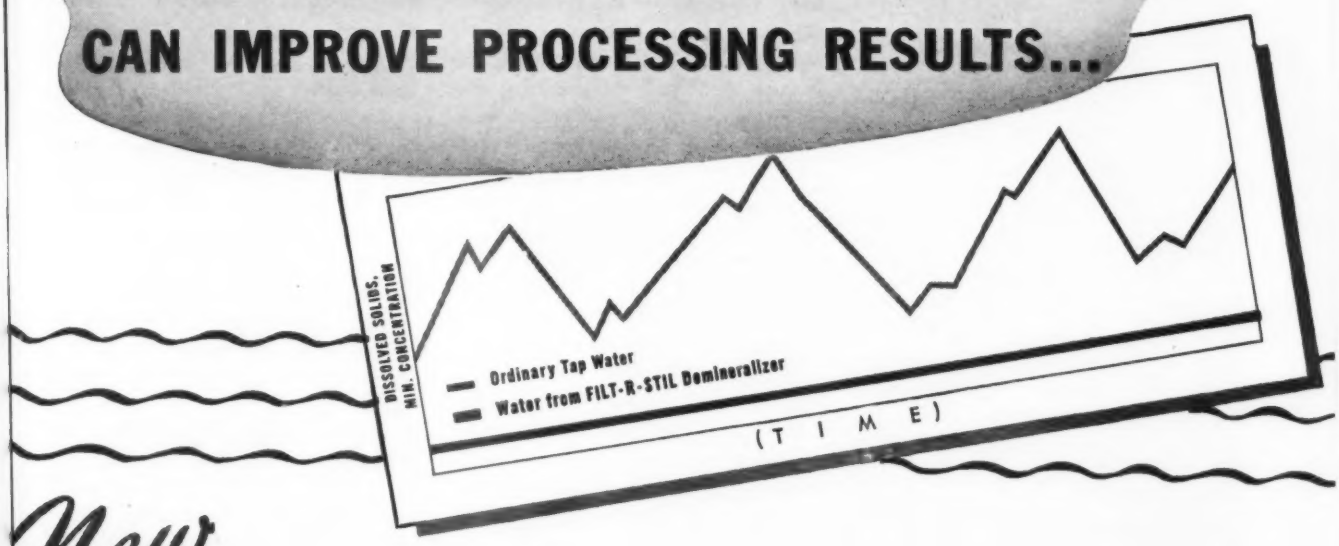
The local C.A.P. officials are inviting representatives of the national, local and trade press, so that worthwhile news and editorial coverage is expected.

An opportunity for the industry

Here's a chance for the porcelain enameling industry to capitalize on the wide-spread interest which the air marker installation is expected to arouse among fliers, state and national government officials, local civic bodies, and others who realize the importance of adequate air marking on a national scale. Thousands of markers will be installed in the months to come, and, properly developed, this market offers tremendous possibilities for the use of porcelain enameled steel.

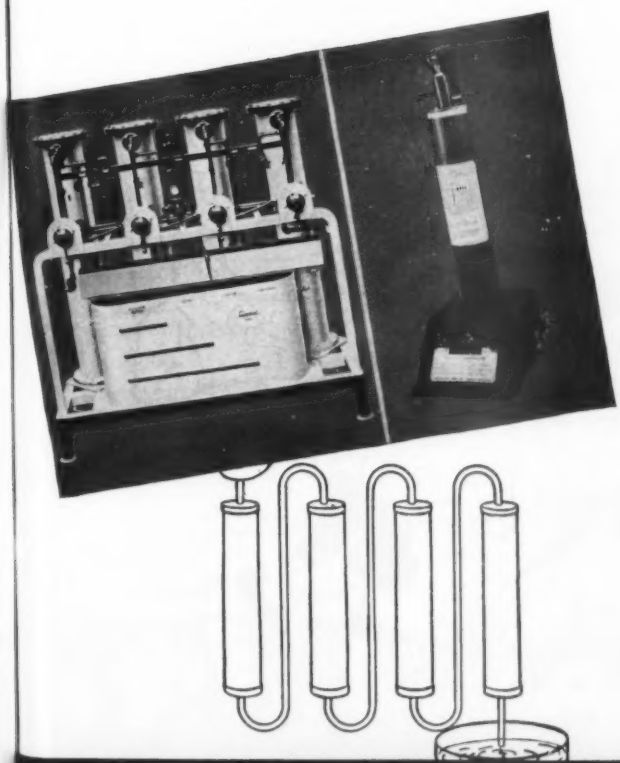
MINERAL-FREE WATER

CAN IMPROVE PROCESSING RESULTS...



New FILT-R-STIL* WATER DEMINERALIZING UNIT ELIMINATES

• HIGH COSTS • PRODUCT CONTAMINATION • OPERATING DIFFICULTIES



How a FILT-R-STIL Demineralizer works . . . Units consist of four "beds" of IONAC* Resins which, by principle of ion exchange, successively remove the dissolved minerals from water. Water is fed through a conductivity cell which indicates quality of water being produced. When resins are exhausted, a regenerative system restores units to full operating efficiency.

You can count on substantial economies in the production of mineral-free water when you install a Cyanamid FILT-R-STIL ion exchange demineralizing unit. This is because, among other things, these units are completely self-contained, simple to install, and easy to operate and maintain.

Available in types and sizes for *every* need, FILT-R-STIL Demineralizers use IONAC* Resins which remove ionized solids, completely or partially—*as specified*—without imparting color, odor, or taste to the solution treated.

The process can be compared to a simple, cold filtration since no heat or cooling water is required. In fact, so simple is the operation that the only requirements are connection to a raw water source, an electrical outlet, and a drain.

Mail coupon now for complete data on FILT-R-STIL Demineralizers.

AMERICAN CYANAMID COMPANY
ION EXCHANGE PRODUCTS DEPARTMENT
30 ROCKEFELLER PLAZA • NEW YORK 20, N. Y.
**Reg. U. S. Pat. Off.*

American Cyanamid Company F.3
Ion Exchange Products Dept. 10
30 Rockefeller Plaza, New York 20, N. Y.

Send me your free booklet on FILT-R-STIL.
Briefly, my water problem is of the following nature:

_____
_____
_____

*Name*_____
*Company*_____
*Address*_____
*City*_____ *State*_____

Washington round-up

→ *from Page 22*

more than 250,000 tons to be imported, which would leave a deficiency of 150,000 tons.

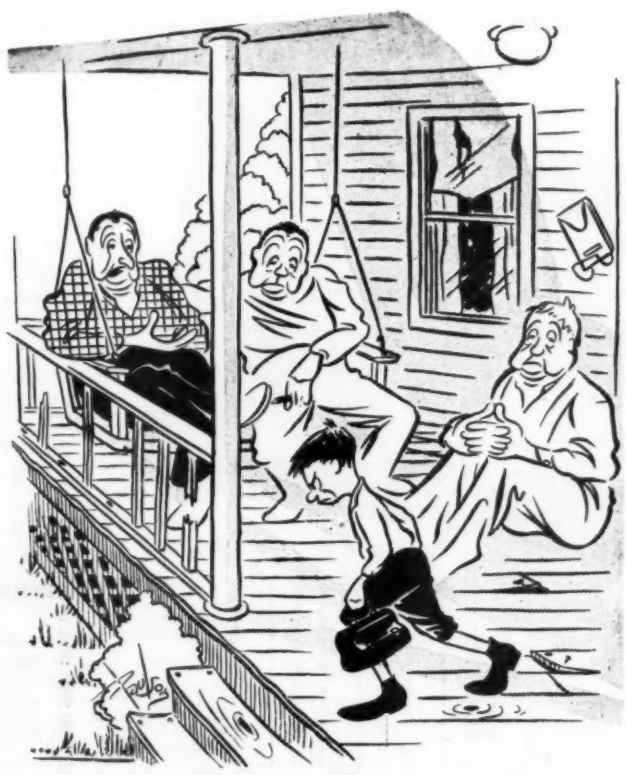
At the same time, legislation is going forward to extend the premium price plan for copper, lead, and zinc for five years, and to set up a Minerals Resources Division in the Department of the Interior to administer the plan. A bill, introduced by Representative Russell of Nevada, has been reported on favorably with the five-year extension by a House Public Lands sub-committee. It is expected to pass both Senate and House. It has the approval of the Department of the Interior and the Army-Navy Munitions Board, and would, therefore, be likely to receive the signature of the President.

The seriousness of the copper situation to manufacturers of refrigerators, washing machines, ranges and automobiles has also been sounded in the House by Representative Crawford, of Michigan, who has introduced a resolution to investigate the copper industry with a view to finding out why there is a deficit of copper and what measures can be taken to correct the shortage. Representative Crawford introduced the resolution as a result of a report on the copper situation by the Federal Trade Commission which painted a dark picture for users of copper in the present supply position. Informed sources believe that the brass mills are probably overestimating the requirements for 1947, and that supply and demand will be in balance in another 12 months.

Complaints from small consumers of steel have been received in such volume by the Senate Small Business Committee that Senator Wherry, of Nebraska, chairman of the committee, has announced the formation of a sub-committee to hold hearings on the problem, if it is found to be serious. The complaints stress inability to get steel and the need for some device to assure small users of sufficient material to enable them to stay in business.

The Wolcott bill to do away with all housing controls, including the restrictions on industrial construction, is now before the House Banking and Currency Committee. There is a possibility that it may replace the Patman Act. It is opposed by the Administration. If construction controls are lifted, it is not believed that industrial building will have such a crippling affect on the housing program as proponents of housing forecast. The high price of materials and the shortage of labor will hold up a large amount of industrial construction, it is predicted. Although veterans' organizations and the Government agencies involved foresee only disaster in a free market for construction, the construction and real estate industries believe greater progress will be made without restrictive controls.

Shipments of porcelain enameled products (except finished plumbing ware) in February, 1947 (the most recent month for which data is available), amounted to $7.0 million, according to a report by the Bureau of the Census. This was a decrease of 11 per cent from the $7.9 million shipped during January 1947. About $6.1 million of the February total represented shipments of finished enameled products. The remaining $900 thousand represent enameling done on a jobbing basis. This represents a change in the type of report inaugurated in January. The data is now divided into two classifications—receipts for enameling done on a jobbing basis, and shipments of finished enameled products. An additional revision in the report is the elimination of data on shipments of finished porcelain plumbing ware on the monthly report. Plumbing ware data will be reported quarterly. This will provide a complete picture of commercial porcelain enameling activity at the end of each quarter. Returns in the present report are from 84 manufacturers.



"Poor Willie! He ain't old enough to draw his Unemployment Compensation yet!"

. . . with only 2 light coats

TITANIUM VITREOUS ENAMELING IRON

Recent production experience with Titanium enameling iron demonstrates . . . more clearly than ever before . . . the unique advantages of this new advance in the enameling industry.

With Titanium enameling iron—the cover coat, in white or color, is satisfactorily applied directly to the base metal. Ground coats are usually unnecessary when proper shop conditions are observed. As a result, production is doubled, often tripled—capacity boosted—and substantial savings effected.

In addition, products can be made with thin finishes superior to chipping and breaking. Resistance to thermal shock at high temperatures is retained. Service life is extended. There is no enamel boiling and little or no sagging or warping at enameling heats. For Titanium stabilizes (or fixes) the carbon in steel. Resultant carbonless iron, having no yield point, is especially satisfactory for deep drawing.

Both manufacturers of enamelware and steel find these and other features of this new Titanium enameling iron worth investigating. It's easy to get the facts. Our field engineers and research organization will welcome the opportunity to cooperate. Write today. There's no obligation, of course.

THE *Merit Mark* OF METAL

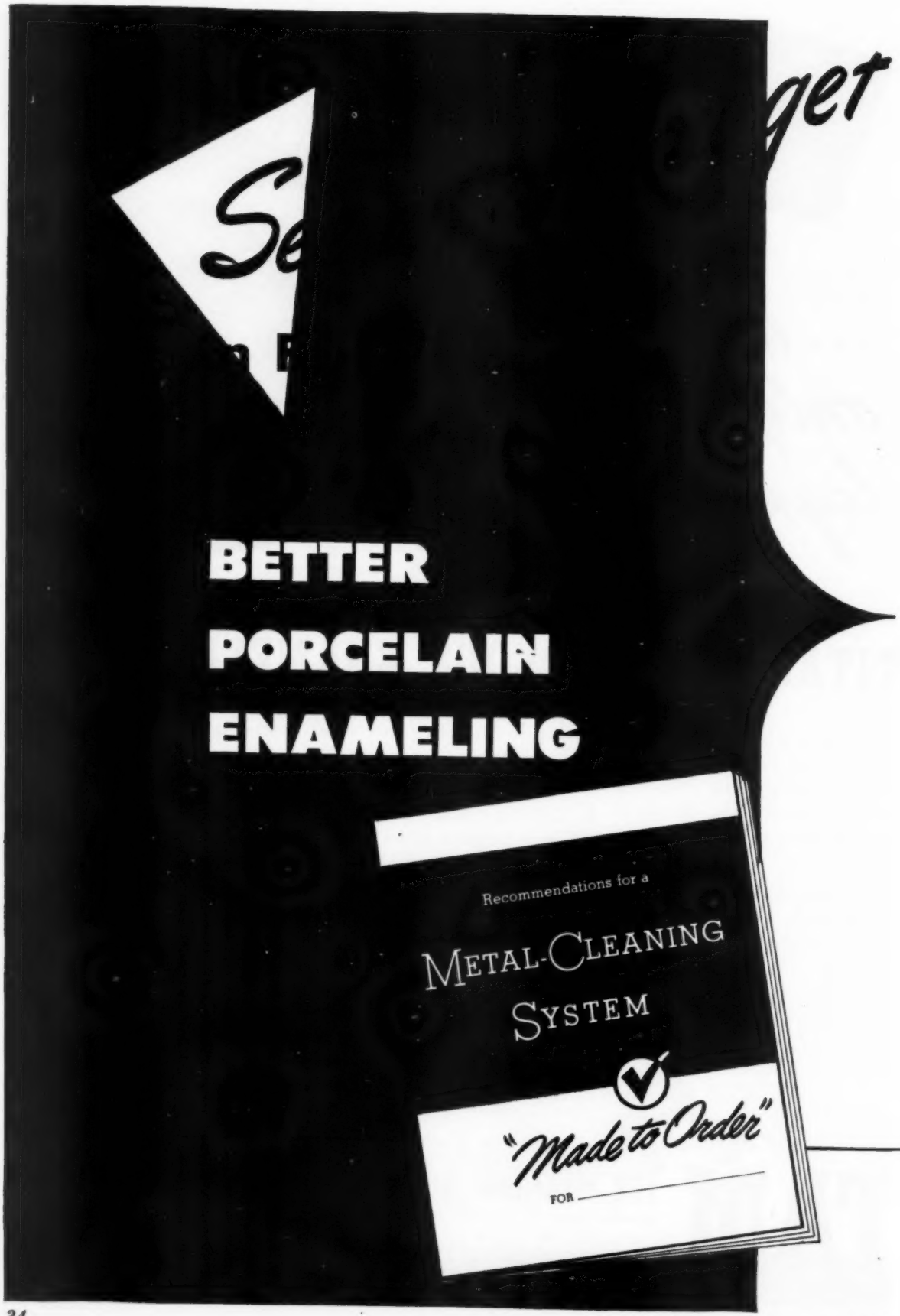
TAM ZIRCONIUM TITANIUM PRODUCTS

Pending patent applications on the new enameling process and products made thereby are owned jointly by Inland Steel Company and The Titanium Alloy Manufacturing Company under Trust Agreement.

TAM **THE TITANIUM ALLOY MANUFACTURING COMPANY**

Executive Offices: 111 BROADWAY, NEW YORK CITY *General Offices and Works:* NIAGARA FALLS, N. Y.

Largest Supplier of Titanium Compounds


get
BETTER
PORCELAIN
ENAMELING
Recommendations for a
METAL-CLEANING
SYSTEM
"Made to Order"
FOR

Now you can have metal cleaning (both the cleaners and process) "made-to-order" for your specific requirements. Here's how it's done.

● Ferro technicians make a thorough study of your plant operations. A Report of Survey is then submitted to our laboratory, along with samples of drawing compounds, water, etc.

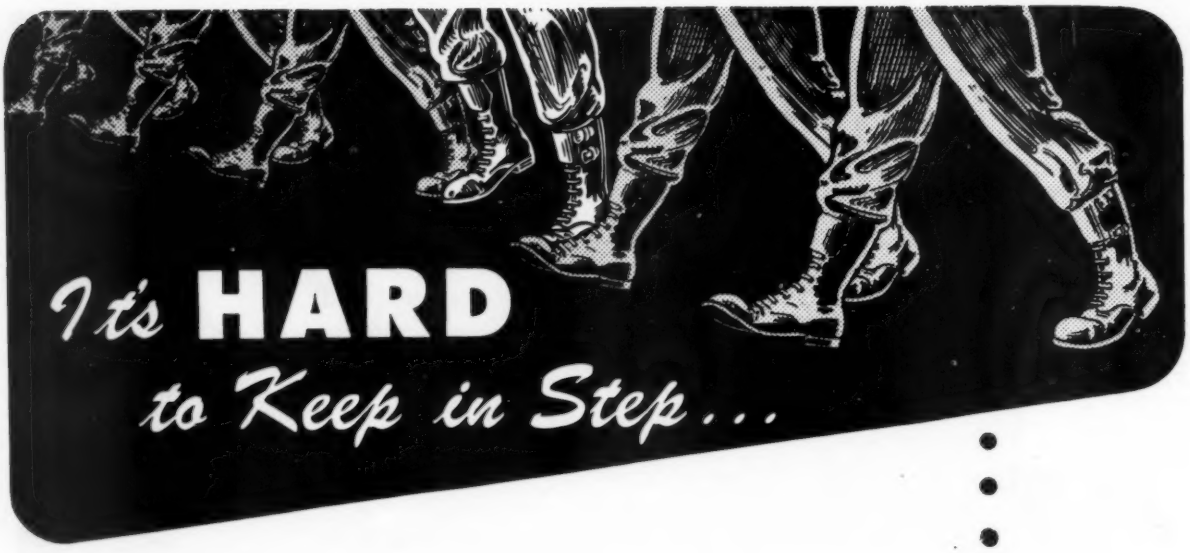
● All data is *checked and double checked* at the Cleaner Laboratory in Cleveland. Quantitative and qualitative tests are run. Then, Ferro chemists develop tailor-made cleaners and a cleaning procedure exactly suited for your requirements. Recommendations (for cleaner, process, or both) are then presented for your consideration.

● When our proposal is approved, Ferro technicians supervise the change-over—*check and recheck* every phase of the operation—then follow up with periodic inspections to assure continued good cleaning.

With such a service, it's little wonder that Ferro Cleaners and Cleaning Systems provide better metal cleaning at lower cost . . . and with fewer production rejects. Let us show you how this newest Porcelain enameling service can work for you.

FERRO ENAMEL CORPORATION

4150 East 56th Street • Cleveland 5, Ohio



It's HARD to Keep in Step...

Sooner or later every job enameling shop finds its production out of step, due primarily to changes in its customers' requirements. Sometimes the enameling department is too busy while the press shop is not running to capacity; or, the press shop may be too busy while there isn't enough work going through the furnaces.

...Today We Have Capacity For Additional Enameling Only Work

Let us quote on enameling some of your parts. Within an economical radius, we can pick up and deliver in our own trucks and give you the quality and service that has kept many concerns on our books for enameling only for the last 20 odd years.

What can we enamel for you? Send us your inquiry with blue print or sample if possible.

VITREOUS STEEL PRODUCTS CO

BOX 1791, CLEVELAND 5, OHIO *(Factory at Nappanee, Ind.)*

NEWS

PEI annual meeting will be held in Cleveland

A report from the Porcelain Enamel Institute establishes the dates of Thursday and Friday, October 9 and 10, 1947, for the annual meeting of the P.E.I.

The meeting this year will include a "sales and management conference," and will include in the program the subjects of executive personnel development and market research for individual plants.

Wilfred Clay to Murray Corp.

Wilfred (Cliff) Clay recently joined the enamel plant organization of Murray Corporation at the company's new Scranton, Pennsylvania, plant, as supervisor of mill room and control.

Clay has a B.S. degree in ceramic engineering from Alfred University. Previously, he was connected with the Enameled Metals Section of the Bureau of Standards, and with the Roberts & Mander Corporation, of Hatboro, Pa., as control engineer.

Norman Heym to Silent Glow

Appointment of Norman F. Heym as manager in charge of vaporizing burner production and sales for the Silent Glow Oil Burner Corporation, Hartford, Connecticut, was announced recently by R. M. Sherman, company president.

Heym attended the University of Michigan, spent eight years with Burroughs Adding Machine Company, and then served Addressograph-Multigraph Corp. For the past ten years he has been associated with Renown Stove Company, Owosso, Michigan, as chief engineer in charge of product, tool and pattern design, and inspection.

New Seeger purchasing agent

The Seeger Refrigerator Company, St. Paul, Minnesota, advises that Frank Knight has been appointed purchasing agent succeeding E. J. Vollhaber. Knight was formerly associated with the Northwest Airlines at St. Paul.

The announcement also states that A. G. Pelzl has been appointed first assistant purchasing agent, and J. E. Swanson, second assistant purchasing agent.

Porcelain enameled truck emblems

Two porcelain enameled NESA emblems have been sent to each active member of the National Electric Sign Association with the compliments of the McMath-Axilrod Corporation, Dallas, Texas. They are attractively made in three colors, black and red on white, and measure eight inches across the top.

These emblems are primarily intended for use on members' trucks as a part of the association's plan to gain wider recognition of the NESA emblem as "the sign of a better sign." It ties in with the association's promotional efforts among sign buyers.

NESA committee activities under way

H. B. Link, president of the National Electric Sign Association, has appointed 12 standing committees to carry out this year's heavy program of activities. President Link states that in order to have all of the committees functioning as soon as possible, a schedule is being drawn up that will provide four meetings at locations most convenient to committee members. Meetings have already been held by the convention, promotional, and labor relations committees.

Consideration of porcelain enamel comes under the "electric, glass and porcelain products" committee. This group is completing standards for porcelain enamel colors.

There is also a sign design contest committee, under whose direction plans will be formulated for a new contest. *(See report on last contest—"National Electric Sign Association Meeting," August, 1946, finish.)*

AW&IMA elects three new members

Election of three new members was announced by the American Washer and Ironer Manufacturers' Association. The Menasco Manufacturing Company, Burbank, California, producer of washers, was elected a regular member. The L. G. S. Spring Clutch Corporation, a subsidiary of the Curtiss-Wright Corporation, Indianapolis, Indiana, and the Delco Products Division of the General Motors Corporation, Dayton, Ohio, were

made associate members, as suppliers to the industry.

At a meeting of the Porcelain Enamel Institute's board of trustees in Cleveland, Ohio, March 28, George Sirovy, Century Vitreous Enamel Co., Chicago, Ill., and T. G. Harris, Porcelain Steel Corp., Connersville, Ind., were elected as board members.

Bennett Chapple, Jr., presents steel outlook to mid-west gas conference

Bennett S. Chapple, Jr., assistant sales vice president of U. S. Steel Corporation, was the keynote speaker of the recent mid-west regional gas sales conference, held under the sponsorship of the Residential Gas Section of the American Gas Association at the Edgewater Beach Hotel, Chicago. More than 600 members of the gas industry were in attendance.

Commenting on estimated steel production, Mr. Chapple said steel ingot capacity had been increased to approximately 92 million tons, a gain of about 15 per cent over pre-war capacity. In referring to steel sheet and strip production, which is of specific interest to appliance and equipment manufacturers, he pointed out that the mills had a capacity of 16 million tons of sheet and strip steel before the war. Despite production capacity increases during the war, the industry had produced only 14 million tons in 1946 because of strikes and work stoppages in steel mills and in allied producers' plants. The industry plans on production capacity of 19 million tons when all new facilities come into operation, late this year or early next year, barring further labor troubles.

Distribution of this output still posed many problems, the speaker said. Even with the lifting of CPA restrictions, the National Housing Authority would demand priorities for veterans' housing; the canning industry would need sheet and tin plate for canning perishable foods for destitute countries, and freight car shortages demanded channeling steel into that field of production. All of these, he indicated, would be competitors with the gas industry in obtaining deliveries of steel.

Among other speakers at the conference were: Harold E. Jalass, general sales manager, Cribben & Sexton Company, whose subject was competitive fuels; H. Carl Wolf, managing director of A.G.A., who covered association activities; E. Carl Sorby, vice president of Geo. D. Roper Corporation, who spoke on "CP" range promotion; and Lloyd C. Ginn, sales promotion manager, American Stove Company, whose theme was reaching

[redacted] and sales [redacted] director, Servel, Inc., brought a cast of seasoned troopers to present an educational skit.

The gas water heater producers were represented by Frank McFerran, general sales manager, Ruud Manufacturing, and Malcolm R. Rodger, utility sales manager for Bendix Home Appliances, Inc.

New line of oil heaters "out in front" with porcelain enamel inside and out

Florence Stove Company announces a completely new line of oil heaters with "matched beauty" styling. This new line, which is said to have been in the process of development since 1945, was presented to the Florence salesmen at a series of meetings in Atlanta, Ga.; Kankakee, Illinois; and Gardner, Mass., and is now in production.

Robert H. Taylor, general sales manager of Florence Stove Company, says, "Florence is stepping out in front with one of America's most beautiful lines of oil heaters . . . they are available in both pot-type and sleeve-type, including all these four kinds of heat delivery: driven-air (fan models), circulators, radiants, and combination circulator-radiants."

The heaters were designed by Industrial Designer Ralph E. Kruck, who says, "This is the first complete line of both pot and sleeve type heaters with matched styling. The sim-

plicity of design, plus carefully considered color, will insure acceptance in *any home.*"

stressed ...
The inside-outside porcelain finish; the Florence sleeve-type burner; and the Florence pot-type burner with patented, *porcelained,* perforated pilot ring that increases combustion capacity 10% with the same draft.

New Canadian dishwasher

Triumph Dishwashers, Ltd., is the name of a new Canadian manufacturing firm which will produce an automatic dishwashing machine suitable for home use.

Konrad joins Norris Stamping

It is reported that Clarence J. Konrad has joined the Norris Stamping and Manufacturing Co., Los Angeles, California, as shift foreman. Konrad was formerly with AllianceWare, Inc., Alliance, Ohio. He was also formerly with Goodyear Aircraft Corp., Akron, Ohio.

Having been in the enameling industry for a number of years, he "felt the urge" to get back into porcelain enameling.

American Gas Association to hold 29th annual convention at Cleveland

The executive board of the American Gas Association announces that the 29th Annual Convention of the Association will be held October 6, 7 and 8, 1947, at Cleveland, Ohio.

The 1946 convention last fall voted for San Francisco as the next convention city. A. G. A. states that all indications point to a large attendance at the 1947 convention. Under present circumstances, this would tax the hotel facilities in San Francisco and result in insufficient hotel reservations to accommodate the members of the Association.

Therefore, the executive board, meeting in Boston on March 21, decided to postpone the San Francisco meeting and voted to hold the 1947 conference at Cleveland.

Announcements covering hotel reservations and other details will be mailed to members of the Association in the near future.

PEI Forum scheduled for September

The annual Forum for plant men, sponsored by the Porcelain Enamel Institute, is to be held at Ohio State University, September 10, 11 and 12, 1947, according to Edward Mackasek, Institute managing director. Headquarters will be at the Deshler-Wallick hotel.

At a recent meeting of the Forum Committee, of which Frank Hodek, General Porcelain Enameling & Mfg. Co., is chairman, plans were further developed for increasing the scope and effectiveness of the Forum, which already has attained an enviable reputation throughout the industry. It is reported that the program this year will include such subjects as production planning, wage incentives, and costs in addition to the usual papers on technical subjects and practical plant operating procedure.

The Porcelain Enamel Institute has received news from the Institute of Vitreous Enamelers, in England, that plans are being made for the chartering of a Constellation to bring some thirty members to this country at the time of the Forum so that they may attend as a group. *(Mr. B. B. Kent, of B. B. Kent, Ltd., London, England, was in attendance at the last Forum.)*

It would seem that if the English companies consider the Forum of sufficient importance to plan a trip of this nature, every plant executive in this country should consider the desirability of having key enamel plant men in attendance.

New Hotpoint president announces multi-million dollar plant expansion program

James J. Nance, newly elected president, Hotpoint, Inc., immediately presented a progress report on the

company's multi-million dollar plant expansion program. In a special statement, issued less than 24 hours after his election, Nance said that a 38-acre site on Chicago's west side had been selected for the company's new range factory. This will give Hotpoint, a General Electric affiliate, a production capacity for 12,000 ranges weekly at range factories at Chicago. These plants have more than one million square feet of floor area. He said that work will be pushed as rapidly as possible to have the expanded facilities in operation by January, 1948.

The new Hotpoint head, who had formerly been executive vice president, indicated that plans, which would include factory expansion for water heaters, dishwashers, and other appliances in the company's complete kitchen and laundry lines, would be announced later.

While the main assembly lines will be moved to the newly selected location, production at the company's other Chicago range factories will continue as supply sources for specific sub-assembly units and for processing components.

Operating at capacity, the combined new facilities will produce almost 2,500 electric stoves daily, the equivalent of more than 40 railroad carloads. The main assembly lines will extend 1,200 lineal feet.

The outlook for materials, includ-

to Page 42 →

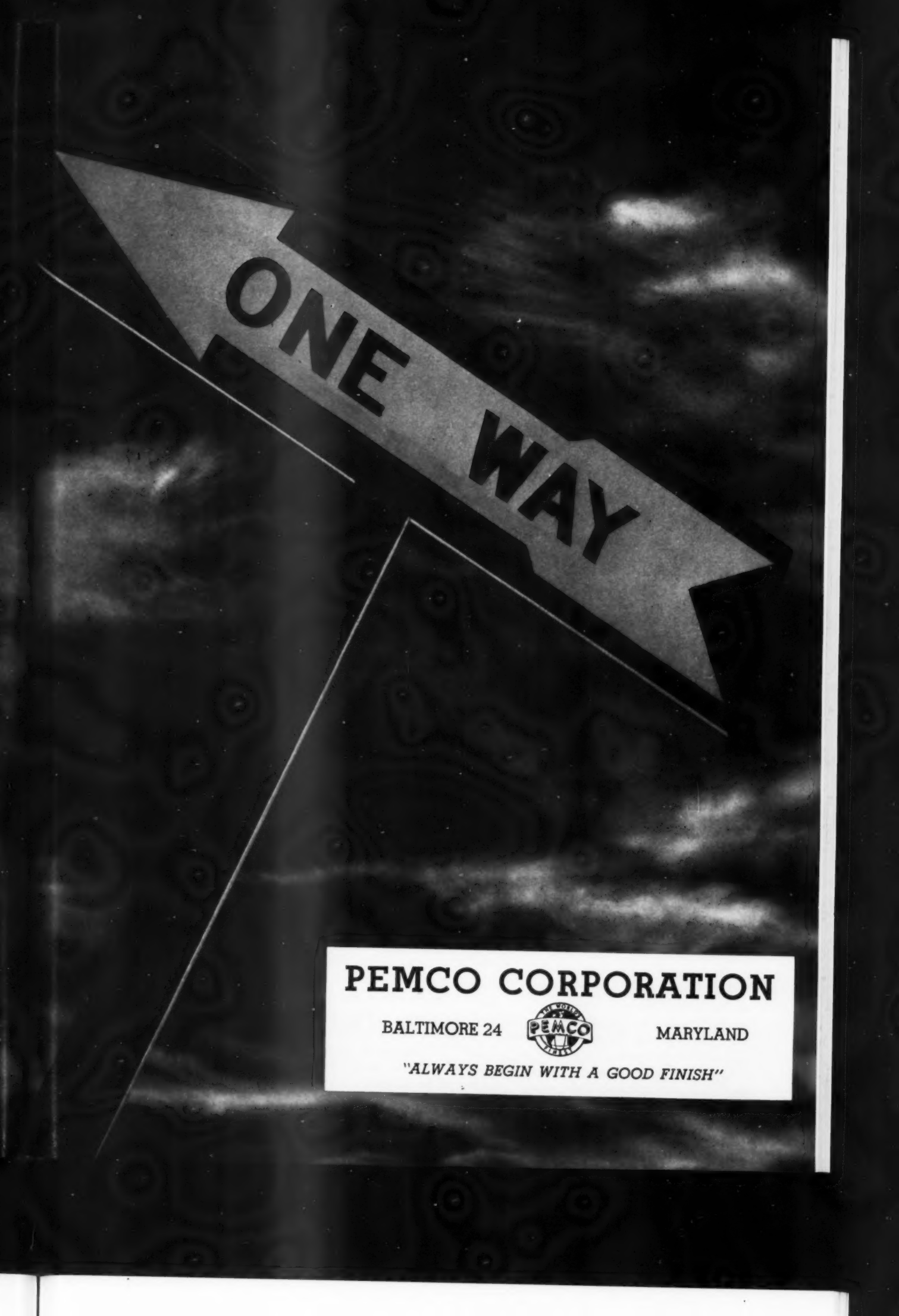
THE INTENT OF MANAGEMENT

It is the intent of Pemco management that each Pemco customer shall be regarded as if he were the only Pemco customer. For this sincerity of interest, this attention, we have sometimes been held at fault. We have been told that while the customer's satisfaction is essential, he seldom expects the thoroughness with which we analyze his problems, nor the time we spend in correcting them. These were the things that business exacted when "George," the President, knew "John," the Storekeeper as "John" and not with the prefix "Mister."

They tell us that business is too big today.

It is true that within the past thirty-seven years Pemco has grown tremendously. It is true that days and months, and even years, are devoted to the development and the perfecting of a product that means thousands and thousands of dollars to hundreds of porcelain enameling plants throughout the world . . . and while this progress continues, we never forget the debt we owe to you . . . OUR CUSTOMER. Never do we feel that our business has grown so modern . . . even though we control the ONLY WHOLLY CONTINUOUS SMELTING PLANT in the entire porcelain enameling industry . . . never do we feel it to be so mechanized, so automatic, that human beings . . . you and your employees . . . our employees . . . are not the most important factors, entitled to the greatest consideration it is possible to extend.

This is the intent of Pemco Management. This is our credo. And it is surprising how many... how very many companies like to do business with an organization with a philosophy like ours.



→ *from Page 39*

ing sheet steel, was described as "the most favorable since re-conversion, with recent moves practically underwriting 1947's extensive needs." He said that plans for further expansion of the company's electric water heater and electric dishwasher factories at Chicago had been completed.

In assuming the top position at Hotpoint, Nance climaxes a climb in merchandising and management dating back to the early 20's when he gained his early training at National Cash Register. He joined General Motors at the time the Frigidaire plant at Dayton was first put into production. Later, he filled management positions at Easy Washing Machine and Zenith Radio. Before joining Hotpoint as executive vice president, he was on the staff of Charles E. Wilson, president at General Electric Company, New York.

New directors and officers at Ferro

The re-election of all old directors and the appointment of four new directors to the board of Ferro Enamel Corporation was announced at the company's annual meeting held in Cleveland, Ohio, April 15.

C. D. Clawson

F. S. Markert

G. W. Wallace

W. B. Lawson

W. B. Lawson, C. D. Clawson, F. S. Markert and G. W. Wallace were added to the board. All are officers in the company or its subsidiaries.

R. A. Weaver was elected chairman of the board, and will continue as the chief executive officer of the company. J. D. Henry was elected vice chairman of the board.

C. D. Clawson, former vice president—sales, research and service, was elected president. Prior to joining Ferro in 1930, Clawson was associated with A-B Stoves, Inc., Republic Metalware and Chicago Vitreous Enamel Product Company.

F. S. Markert, former vice president—manufacturing and engineering, was elected executive vice president and general manager. He joined the Ferro organization in 1926 as a field engineer.

Wilfrid Mavor was re-elected vice president in charge of Ferro's International Division.

Dr. G. H. McIntyre, who has been director of research, was elected vice president of the company.

G. W. Wallace, who has been comptroller and assistant treasurer, was made treasurer. He is also a director and secretary of Ferro Chemical Corporation.

G. E. Weber is the new comptroller. C. M. Horn was re-elected secretary, with J. E. Hansen as his assistant. Marie H. Foster was re-elected assistant treasurer.

Norge making water heaters

The Norge division of Borg-Warner Corporation, Detroit, has announced its entry into the electric water heater business with the introduction of five models of the product into the company's line of household appliances.

In making the announcement, M. G. O'Harra, vice president and director of sales, disclosed that deliveries are now being made to distributors throughout the nation, and that dealer sampling should be completed within a relatively short period.

Bryant Heater appoints New England representative

Dudley & Garland, newly formed Boston sales engineering firm, has been appointed New England representative of the Industrial Division of Bryant Heater Company, Cleveland.

According to the report, the new firm, located at 176 Federal Street, will handle application of Bryant industrial gas combustion equipment in all six New England states, with the exception of southwestern Connecticut, which will continue to be served by the Bryant New York district office.

EUMC exhibiting at National Housewares Show

The Enameled Utensil Manufacturers Council is exhibiting in space 770 at the National Housewares Show in Convention Hall, Philadelphia, (April 27 to May 2) under the direction of Charles E. Smith, advertising manager.

Of direct interest to housewares' buyers is a colorful slide film which briefly depicts the highlights of the

Newest of two Boland continuous furnaces in the plant of Tennessee Enamel Manufacturing Company, Nashville, Tennessee

Another BOLAND Continuous Furnace is producing quality ware — —

From North, South, East and West comes the same story — Boland continuous furnaces are producing more ware, and better ware. The reasons are built-in reasons, a part of the furnace design and construction.

First of all, Boland straight away, SINGLE FLOW design insures equalized temperature, from two muffle walls, for both sides of the ware. A gradually increasing temperature in the pre-heat zone aids in the kind of uniform firing that every enameler wants.

Next to consider is the FULL FURNACE LOAD, the bigger pay load, made possible by straight away construction. There need be no waste space in a Boland furnace to provide for proper spacing at narrow radius turns.

And, here is a point you can't afford to ignore — Boland, and only Boland, offers the exclusive, patented FLOATING ROOF CONSTRUCTION, "built like Gibraltar." This feature, together with strong construction throughout, is a big reason why Boland furnaces continue to produce quality ware in quantity long after an ordinary furnace may be requiring costly repairs. Let's talk over your furnace problems.

ALBERT J. BOLAND COMPANY

407 NORTH EIGHTH BUILDING • ST. LOUIS 1, MO.

Designers and Builders of Continuous and Box Type Enameling Furnaces

Council's consumer education program — now in its sixth year.

Behind the slide film, covering the back wall of the E. U. M. C. booth, is a one-wall kitchen display. Spotlighting porcelain enameled utensils in their natural setting, this portion of the exhibit is keyed to kitchen decoration and proper storage of utensils.

ACS Pittsburgh section elects new officers

At the April 8 meeting of the Pittsburgh Section of the American Ceramic Society, officers were elected for the 1947-48 season. E. E. Marbaker, Mellon Institute, chairman of the Nominating Committee, read the list of candidates presented at the March 11 meeting and, on a motion from the floor, the secretary was instructed to record election by acclamation.

The new officers are: Chairman—J. S. Nordyke, The Eagle-Picher Co.; Vice Chairman — G. M. Lambe, United States Gypsum Co.; Councillor—Theodore Lenchner, Vitro Manufacturing Co.; Secretary — F. L. Bishop, Jr., American Window Glass Co., and Treasurer — L. A. Smith, Jones & Laughlin Steel Corp.

Ladies Night scheduled for May 23

The annual "Ladies Night" of the Pittsburgh Section of A.C.S. has been announced by the publicity committee. They expect this event to be a high light of the season, and to provide a suitable climax to a successful year. The meeting will be held at the University Club, on May 23. A banquet and entertainment will be followed by dancing. An invitation is extended to all members and friends of the Section.

Maypole Party

The Chicago District Enamelers Club Maypole party will be held Friday, May 9, at Mangam's Chateau, 7850 Ogden Ave., Lyons, 12 miles southwest of Chicago's loop. Entertainment, music, dinner and door prizes will be the fare. Mail reservations to: E. P. Bolin, 1407 South 55th Court, Cicero 50, Ill.

Household equipment editors guests at Mullins Mfg.

Thirteen household equipment editors from 11 large magazines were the guests of Mullins Manufacturing Corp. in Warren, Ohio, March 27.

Paying tribute to the group, Marshall Adams, advertising and sales promotion manager, declared that "you people have done more than any other group to make American housewives kitchen-conscious." He congratulated them for having quickly grasped the fact that making, selling and planning kitchens is becoming one of the country's largest home appliance businesses.

Shown in the picture, seated left to right, are: Charlotte Conway, House Beautiful, New York; Ida Migliaro, Household, Topeka; Helen Kendall, Good Housekeeping, New York; Emily Macy, Ladies Home Journal, New York; Myrna Johnston, Better Homes and Gardens, Des Moines; Marian Knowlton, McCall's, New York.

Back row, left to right, are: T. L. Henderson, Good Housekeeping; Katherine Fisher, director, Good Housekeeping Institute; Margaret Schnug, Country Gentleman, Philadelphia; Lila Williamson, Farm Journal, Philadelphia; Edith Ramsay, American Home, New York; Louise Leslie, What's New in Home Economics, Chicago; Stella Crowell, True Story, New York; and C. A. Morrow, Mullins' vice-pres. — merchandising.

New secretary at Enamel Products

News comes to *finish* that George C. Johnson, Jr., is secretary of the Enamel Products Co., Cleveland, Ohio, with R. E. Taylor as factory manager. Johnson replaces G. B. Dunn, who served as secretary of the company for a number of years but is no longer associated with the Cleveland firm.

Athy to Ingersoll Steel

Announcement has just been made by Ingersoll Steel Division, Borg-Warner Corp., Chicago, that Lyman C. Athy has joined the organization as superintendent of the enamel shop.

Athy has had broad experience in the porcelain enameling industry. He was with General Electric as foreman; with Briggs Mfg. Co. as factory manager; was director of research at Pemco Corp.; and was vice president of International Products Corp. He is a graduate of Ohio State University — metallurgy and ceramic engineering.

Moore pushing production on new smokeless coal heater

Manufacturing plans for the new smokeless coal heater of the Moore Division of the Conlon-Moore Corporation are being vigorously expedited, Harry T. Worthington, vice president and general manager, has announced.

Progressive straight-line production is scheduled for May, and manufacturing momentum and volume are to be stepped up as raw material procurement permits. Pilot run sample units were on test through the heating season just closing at strategic coal burning areas for exhaustive field observation. The new heater is

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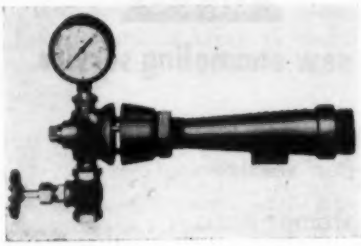
New Supplies and Equipment

High pressure gas mixer



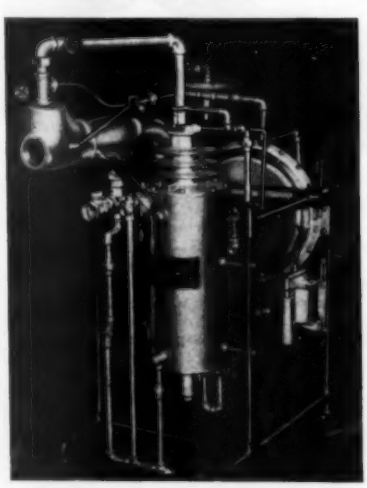
Production of a venturi mixer for high pressure gases, incorporating improved mechanical design features, has been announced.

Known as the "Hijector," the new unit uses gas under pressures up to 35 pounds to entrain all the air needed for combustion, and to deliver the mixture to burners at the highest possible pressure.

Available in pipe sizes from ¾" to 4", the mixer is suitable for use with all types of gases, including liquefied petroleum types.

Specifications and capacity tables for gases ranging from 500 to 2,500 B.T.U. are included in Data Sheet 5B-1, available on request from Industrial Division, Bryant Heater Company, 17825 St. Clair Avenue, Cleveland, Ohio.

Gas generating unit



The accompanying illustration shows a "Vapofier" gas generating unit attached to atmosphere producing equipment developed and used by Hevi Duty Electric Company, of Milwaukee, Wisconsin.

Regardless of the method of combustion and mixing of fuel and air, the maintaining of a constant furnace atmosphere requires a constant fuel to air ratio. Fuel-air ratio may be pre-determined and maintained throughout the entire range of capacity of the Vapofier, without change in the manifold pressure.

The equipment also serves where standby facilities for utility gas are of interest. The units are built with capacities from 70,000 to 2,000,000 B. T. U.s per hour.

The Vapofier, utilizing fuel oil, generates and supplies a vapor, which is then mixed with air and is piped, burned, and controlled in exactly the same manner as utility gas.

Write Vapofier Corporation, 10316 South Throop St., Chicago 43, Illinois.

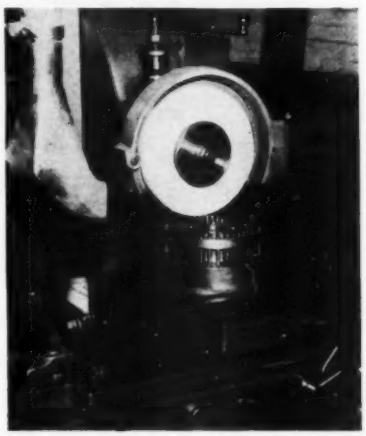
Heat exchanger for corrosive application

Seven tube impervious graphite shell and tube heat exchangers for use under highly corrosive conditions are now available in three standard sizes of 4'3", 7'3" and 10'3" length. The exchangers are identical in every respect except for pipe length and the number of baffles, and all tube bundles and shells of the same size are interchangeable.

"Karbate" impervious graphite is said to have properties of high thermal conductivity and resistance to the action of most acids, alkalis, and other corrosive, solvent or reducing agents — particularly to all concentrations of hydrochloric acid and nearly all concentrations of hot sulphuric, phosphoric and acetic acids, wet chlorine and the organic solvents.

Write for Catalog Section M8808 to the National Carbon Company, Inc., 30 East 42nd Street, New York 17, New York.

New grinding wheels



A new development in grinding wheels, "Series 20," a development of the Technical Laboratories of Carborundum Company, was recently announced.

The new type wheel is said to offer faster stock removal, less grinding labor hours, fewer damaged tools (less scrap), longer tool life (between grinds), less heat generation, better tool finishes, and smaller inventories.

For further information contact T. F. Gray, The Carborundum Company, Niagara Falls, New York.

Heavy-duty industrial intercom units

New dust and moisture-proof, metal-housed, industrial type intercom Staff stations for remote and privacy operation, have recently been introduced by Executone, Inc., manufacturers of electronic intercommunication and sound systems.

Steel-cased for rugged wear, these compact stations are designed to solve communication problems in refrigerated rooms, laundries, shipping and receiving platforms, foundries, and all other locations where they will be exposed to rough usage.

Contact Executone, Inc., 415 Lexington Avenue, New York 17, New York.

Eye protection

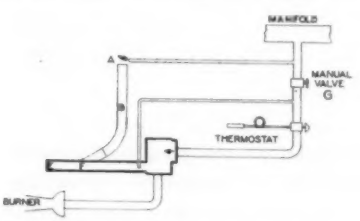
A new eye washing fountain for

the immediate flushing of eyes that have been exposed to irritating vapors, liquids, dusts, chemicals, or smoke, has been invented, designed, and developed by Benson & Associates, Inc., 332 South Michigan Avenue, Chicago 4, Illinois.

The new eye washer is essentially a double fountain with standard inlet and drainage connections. The openings are so arranged that two streams of water are simultaneously directed against the eyes. The equipment is manufactured by Precision Scientific Company, of Chicago, Illinois. Write Benson and Associates for further information.

Automatic ignition accepted by gas range producers

The American Gas Association reports that patented range lighters are now being incorporated in many of the new ranges being built to "CP" specifications by the group of appliance manufacturers who have adopted the "CP" trademark. Tested and



certified by the AGA testing laboratories, in addition to the test applied in the laboratory of the lighter manufacturer, the comparatively new product is said to have proved to be fast and dependable in operation, sturdy in construction, and built to retain its automatic action throughout the life of the range that carries it.

The device is adaptable to three types of ignition — cycling flash tube ignition, cycling gas ignition, and cycling electric hot wire ignition.

It is estimated by the manufacturer, The Bryant Heater Co., 1020 London Road, Cleveland 10, Ohio, that contingent upon normal supplies of materials and labor, more than 200,000 range lighters will be installed in cooking ranges in 1947. Companies who will use the lighter during 1947 include: American Stove Company, Cribben & Sexton Company, Glenwood Range Company, Hardwick Stove Company, Geo. D. Roper Corporation, and Tappan Stove Company.

Patent stove, refrigerator fuel device

A new application of the gas refrigeration cycle that will permit use of the same fuel in both kitchen stoves and refrigerators at the same time, and suggest the development of a "refrigerator that cooks your dinner" is claimed in Patent Number 2,396,877, granted Peter Schlumbohm of New York.

Opening the way to a combination stove and refrigerator, the appliance would have extensive use on many farms in outlying communities where a bottled petroleum fuel is now used in gas ranges. The inventor claims that every desired pressure will be available and the use of preheated gas being fed to the burner will result in more efficient and economical combustion, especially advantageous where the steel gas storage bottle is kept outdoors and exposed to low temperatures. The gas is preheated by the compression and condensation parts of the refrigeration cycle.

New industrial literature

New motor repair equipment catalog

As an aid to the great scarcity of motors and generators, a new 10 page illustrated catalog describes motor maintenance tools which conserve present equipment.

The equipment described is: commutator and slip ring resurfacing stones, polishing stones, commutator saws and milling cutters, carbon brush seaters, blowers and vacuum cleaners for removing dust and lint from motor windings, a varnish insulation sprayer, voltage and circuit tester, 14 types of wire insulation strippers, live centers for lathe turning of armatures, fuse reducers, etc.

Contact Holub Industries, Inc., Sycamore, Illinois.

For de-enamelers

An elaborate 72 page text has been designed for use by technical men, buyers and executives interested in the economics of caustic soda; the operations man who is interested in the best procedures for unloading, handling and storing this chemical; the engineer who must design equipment; and the student or layman who desires useful data on the characteristics, uses, forms, transportation, constants, etc., of caustic soda. The book is printed in three colors throughout and contains graphs, charts and diagrams as well as being profusely illustrated with descriptive photographs.

Write for a copy on your company letterhead to Pittsburgh Plate Glass Company, Columbia Chemical Division, Fifth Avenue at Bellefield, Pittsburgh 13, Pennsylvania, for Form A-100.

Booklet on metal finishing (deburring)

A new booklet of interest to manufacturers of cast, stamped, and machined metal parts which require a final deburring or finishing process, has just been released.

Entitled "Low-Cost Deburring and Finishing with 'HONITE' Abrasive Pebbles," this 12-page illustrated publication may be had by writing to the Advertising Department, Minnesota Mining & Manufacturing Company, St. Paul 6, Minnesota.

Laboratory equipment magazine

The background and development of the modern analytical balance is the theme of the lead article in the new "Announcer of Scientific Equipment," a house magazine emphasizing current developments in laboratory apparatus and present data on items facilitating scientific progress.

Copies of this journal are avail-

able to *finish* readers. Write Eberbach & Son Company, Ann Arbor, Michigan.

Spray booths and dust collectors

Bulletins No. 101 and 201 are two new technical booklets covering the two products included in the above heading.

The booklets provide the industrial engineer with pertinent data and simplified selection methods. Write on company letterhead (with writer's title) to Peters-Dalton, Inc., 17900 Ryan Road, Detroit 12, Michigan.

Remote transmission systems

A new catalog on remote transmission systems for applications where electrical transmission for indicating, recording and control of temperature, pressure, flow and liquid level is neither desirable nor permissible.

This new 24-page booklet is profusely illustrated and carries several schematic diagrams of typical applications. Its operating features are fully explained and there is a comprehensive description of the component parts which make up the system.

Catalog free from: The Brown Instrument Company, Wayne & Roberts Aves., Philadelphia 44, Pa. Ask for Catalog No. 5902.

Industrial dust problems

A new 23-page illustrated booklet discusses various types of industrial dust problems and typical applications of air filters to such problems.

Included in this booklet are a chart of size and characteristics of airborne solids and sections dealing with atmospheric dust, and filtered air for: industrial air conditioning, industrial ventilation, drying operations, product finishing, control of bacteria and mold spores, cooling electrical equipment, engines and compressors, and miscellaneous industrial applications.

Issued free by American Air Filter Co., 215 Central Ave., Louisville 8, Ky.

Leaflet on cleaning and pickling cycles for porcelain enameling

A four-page leaflet giving instructions on cleaning and pickling cycles for the porcelain enamelers has been published by the Special Chemicals Division of the Pennsylvania Salt Manufacturing Company.

Included in the new leaflet are instructions on the new spray type cleaning and pickling cycle, which has recently been adopted successfully by several porcelain enameling plants. The leaflet also describes the soak tank cycle. Copies may be obtained by writing to the company's offices at 1000 Widener Building. Philadelphia 7, Pa.

Foods may be stored with perfect safety in porcelain enameled ware that has been used on the range or in the oven. Allow the food to cool to room temperature before placing container in the refrigerator.

→ *from Page 44*

the latest product of Moore, who claims the introduction of the first circulating warm-air heater in 1891.

Elect Ganzer president of Coolerator

John H. Ganzer, former vice-president, has been named president of the Coolerator Co., succeeding the late William F. Arndt, according to an announcement by the company's board of directors.

Associated with the Duluth, Minn., firm since 1921, Mr. Ganzer was named vice-president shortly after joining the company. Until 1932, the firm was known as the Duluth Showcase Co.

Exposition features atomic energy

Construction of the $100,000 display of atomic energy in action, central theme of the 1947 Mid-America Exposition in Cleveland's Public Auditorium, May 22 through 31, is being pushed to completion with the full cooperation of the United States Atomic Energy Commission and the nation's industries which had a part in the $2 billion research that resulted in the war-time atomic bomb. The Cleveland display will show the peacetime applications of the development.

Norge reports all-time production records

New all-time highs have been reached in the production of Norge gas and electric ranges and home heaters, and record output peaks on domestic refrigerators and washing machines should be achieved by mid-year, according to M. G. O'Harra, vice president and director of sales, the Norge division of Borg-Warner Corporation, Detroit.

O'Harra predicted that despite the efforts of Norge and other producers in the field, there would be no clearly evident "buyers market" for household appliances for many months to come. "New families, obsolescence of old models, and modern features of the new ones, are just a few of the factors which will maintain consumer demand at its present strength."

Commenting on the high output rates thus far attained, O'Harra said the company had reached these peaks "much sooner than many thought possible" and in the face of seemingly insurmountable manufacturing difficulties.

Carnegie-Illinois advances Rohl

Edward T. Barron, chief metallurgical engineer of the Carnegie-Illinois Steel Corporation, announced that effective April 1, Louis J. Rohl of Chicago, formerly district metallurgical manager, was promoted to become assistant chief metallurgical engineer in Pittsburgh. The move is in line with a postwar program for the consolidation of the company's metallurgical division.

Rohl has been district metallurgical manager for Carnegie-Illinois since

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From airplanes to kitchen ranges and frozen food cabinets

(Continued from Page 16)

Overhead conveyor used to propel tote boxes

After porcelain enameling, ware is transferred to tote boxes with special carrying fixtures. These are conveyed by an endless 1500′ overhead conveyor line, connection being by chains hooked to line and tote boxes. These then travel along floor without tracks. Ware is finally delivered to storage along the station areas of the final assembly line.

Following straight-line assembly principles, work is banked as conveniently to basic final assembly lines as possible. The gas stove final assembly line has 50 stations. It is of the slat-conveyor type, 400′ long. It was moving at the rate of 170 production units per day when I visited the plant. There are basic parallel assembly lines for both gas and electric ranges. These end in convenient location to loading docks. Final assembly inspection is progressive.

The management team—chairman to foreman

(Continued from Page 21)

(5) The National Association of Foremen provides an outstanding medium through which such organizations can be formed. At its 23rd annual convention, held in St. Louis recently, its objectives were reiterated in the following language:

"*First*, to promote and create unity and cooperation among all members of management, including everyone from assistant foremen to executive officers; *second*, to raise the standards of management as a profession, all along the line; *third*, to emphasize to all management men the duty and opportunity they have to improve human understanding throughout industry; and, *fourth*, to provide the means for management men who believe in the N. A. F. code of ethics to exchange ideas and build more effective leadership through education and association."

A medium should be provided through which outward expression may be had of the complete dependence all levels of supervision and management have upon all other levels.

This gives top management an opportunity under the proper environment to present company problems and policies that would otherwise never filter through to the lower levels of management.

Finally, such a medium brings together all members of the Management Team, on a thoroughly man-to-man basis, which is the very essence of good human relations.

Plastic drop hammer punch dies

(Continued from Page 24)

has produced 4000 parts and is still going strong. The best production record of a lead die in the same operation was 100 parts.

Plastic dies in current use are installed on drop hammers ranging in size from 1 to 5 tons. Such diversely shaped objects as wing tips, outer skin cowlings, and carburetor air scoops are among the parts being produced. There is a noticeable difference also in the quality of the work turned out. The plastic dies cause less wrinkling and produce a smoother surface than was possible with lead dies. Furthermore, their low-wear characteristics permit consistently narrower tolerances. This is especially desirable when the formed part will be included in an assembly where exact matching of drilled rivet holes, or matching of seams to be welded, is necessary.

Die "warm-up" prevents failures

Very few die failures have occurred —none since a routine procedure for "warming up" newly attached dies has been evolved. At first, operators brought cold dies from outdoor storage, installed them, then tried to strike a full blow immediately. This caused a few dies to shatter. Now, prior to striking a full blow with a cold die, several partial blows are struck, enough to cause molecular excitation to slightly warm the die interior.

Another somewhat intangible but nonetheless important advantage accrues from use of the plastic dies. This is increased operator comfort. When all-metal hammer dies are used, despite the fact that his ears are usually stuffed with cotton, the operator experiences considerable vibratory impact when the blow is struck. Furthermore, the loud noise produced creates considerable annoyance in nearby departments. The inherent resiliency of the plastic dies absorbs a considerable proportion of impact vibrations, and the noise level is greatly reduced.

Douglas engineers also produced several stretch press dies using cast phenolic material. Though these dies were entirely satisfactory from the production standpoint, they were no better than conventional cement dies and, in this case, the cement dies are much cheaper to produce.

Pacific Coast Club

(Continued from Page 25)

tion would undoubtedly result in a policed state, and our first real step toward socialism.

The Doctor ended his speech with the definite statement that solution of the current problem *does not* indicate government intervention. He did not ask anyone to agree with him, but substantiated his talk with such logic that it was difficult to do otherwise. A large proportion of club members lingered on after the meeting to rehash Kaplin's views. It was agreed by all that the talk was highly interesting, and that, in the light of current conditions, Kaplin's views were not as controversial as the subject might indicate.

WHEN WE RECEIVE YOUR PORCELFRIT ORDER . . . WE REALLY S·T·A·R·T TO WORK FOR YOU!

It is not enough for us that PORCELFRIT has worked for hundreds of customers . . . it's got to work for YOU.

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INGRAM-RICHARDSON MFG. CO., OF INDIANA, INC.
OFFICES, LABORATORY AND PLANT, FRANKFORT, INDIANA

The properties of porcelain enamel and their effect upon enamelware

(Contitnued from Page 18)

Enamel D over C: Solubility .0010 grams per square inch.

Enamel D over B: Solubility .0018 grams per square inch.

Enamel D over A: Solubility .0057 grams per square inch.

In cases where low solubility is desired, the final coating must not only have low solubility, but it must be backed by an enamel whose solubility is relatively low. This condition arises from the fact that it is extremely difficult to obtain a coating which will be totally impervious throughout the duration of the test.

TABLE XII.

THERMAL SHOCK — IMPACT

FINAL ADJUSTMENT OF EXPANSIONS: INCREASED THICKNESS

Lot	Ground Coat	1st Cover	2nd Cover	Firing	Inside Thickness	Thermal Shock	Outside Thickness	Impact
50	Blend A	C-3	—	1540-3	8.9	6.6	10.5	9.7
51	Blend A	C-3	C-0	1540-3	13.8	12.6	13.4	12.1
52	Blend D	C-3	—	X	8.4	8.6	8.9	10.4
53	Blend D	C-3	C-0	X	12.9	14.2	11.8	13.8

Blend D: 20 parts G4; 40 parts G2 and 40 parts G3.

X : Firing was gradually increased up to 1600° F. for 5 minutes in order to fire out properly, bond was good across bottom and sides, but poor on radii. Cover coats fired 1540° F. — 3 minutes.

Steel : B; Five pans for each test.

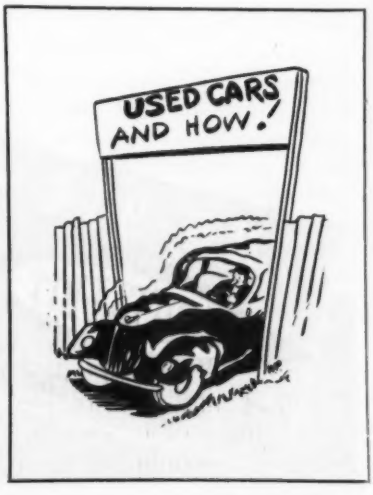
The above values illustrated the necessity of considering the solubility of the first cover coat in the manufacture of triple-coated ware.

SECTION VII: SUMMARY

The data obtained in this investigation show that a close relationship exists between enamel properties and values obtained on the finished enameled ware when tested according to E. U. M. C. standards. The information obtained confirms the results presented in a paper by Prof. Petersen before The American Ceramic Society. In the present study, cover coat compositions have been confined to those containing antimony.

The important points which have been proven or confirmed are:

1. Although a known difference exists between calculated and determined expansion values, it has been shown that the calculated method may be used as an excellent guide in work of this nature.
2. Resistance to thermal shock increases as cover coat expansion decreases.
3. Resistatnce to thermal shock increases as ground coat expansion increases.
4. Expansion of either cover or ground coat does not appear to influence impact resistance.
5. Resistance to impact depends primarily upon the thickness of coating regardless of the expansion of the enamels used. Resistance increases as outside thickness increases.
6. Resistance to thermal shock decreases as inside thickness increases. Greater variation in thickness can be tolerated when the expansions are properly balanced.
7. Using a single cover coat, the thermal shock resistance decreases rapidly for calculated expansions over 280.
8. In the case of triple-coated ware, thermal shock resistance will decrease, remain constant or increase, depending upon the manner in which the expansions of the various coatings are combined.
9. The use of a properly blended ground coat appears advantageous in regard to workability as well as resistance to both thermal shock and impact resistance.
10. From the results obtained, the bonding property of the ground coats used did not influence either thermal shock or impact resistance.
11. Variations which might occur in practice did not affect the results.
12. Choice of cover coats will vary with individual operators, and will be governed by some preference regarding thermal shock and solubility values, workability and general appearance of the fired coating.
13. Choice of ground coats should not be difficult in that a wide range of conditions can be covered by properly blending different frits having satisfactory properties.
14. The effect of variations in practice may not be readily detected by the solubility test when the enamels have low values.
15. The solubility of the first cover coat in triple-coated ware must be low in order to not materially raise the value of the final coating.



→ *from Page 49*

July, 1943. He began service with the company 30 years ago at the South Chicago plant. In January, 1936, he became assistant to the general superintendent of the plant and soon thereafter was made assistant manager of the metallurgical department.

Effective April 1, Ross L. Leffler has been made assistant to the president, Carnegie-Illinois Steel Corporation, it was announced by C. R. Cox, president of this United States Steel Corporation subsidiary.

Maytag re-elects officers

Fred Maytag was re-elected president of the Maytag Co. at its annual home office meeting in Newton, Iowa, March 30. Others renamed included George M. Umbreit, executive vice-president and treasurer; Roy A. Bradt and I. A. Rose, vice-presidents; W. I. Sparks, secretary; and E. L. Nelson, assistant secretary.

Directors, also renamed, included Fred Maytag, Umbreit, Bradt, Sparks and Robert E. Vance, all of Newton; L. B. Maytag, Colorado Springs, and Cyril J. C. Quinn, New York City.

Mr. Maytag told stockholders that production in 1946 topped all records of the company's 54-year history.

Cowles Detergent appoints Fulton

The Cowles Detergent Company, Cleveland, Ohio, announces the appointment of Harold F. Fulton as its technical man in the New York state territory to handle sales and service work for the Metal Cleaner Department.

Mr. Fulton is a graduate of Miami University. During the war he was employed by Allegheny Ludlum Steel Corp. at its Dunkirk, New York, plant.

New director of Bendix Home Laundry Institute

Miss Margaret B. Doughty has been appointed director of Bendix Home Laundry Institute at South Bend, Ind. She succeeds Miss Edwina Nolan, who retired recently.

Miss Doughty joined Bendix after serving as head of the household equipment department in the college of home economics, Washington State College. Experience as a home economist for distributors of electric appliances is also reported. She has a bachelor of science degree from Michigan State College and a master of science degree, with a major in household equipment, from Iowa State College.

THE CORRECT COAT

This light gauge metal can was cleaned and coated with alumina silicate coating (Kraus Patents), and put into service over 4 years ago. It served as a refuse can for one year and then as a garbage can. Now after four full years of hard use it's still going strong.

Kaykote can handle the tough jobs for it is highly resistant to rust, corrosion, heat, impact, abrasion, scratch, acids and alkalis. It will pay you to investigate Kaykote now.

Spray it...
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KAYKOTE
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